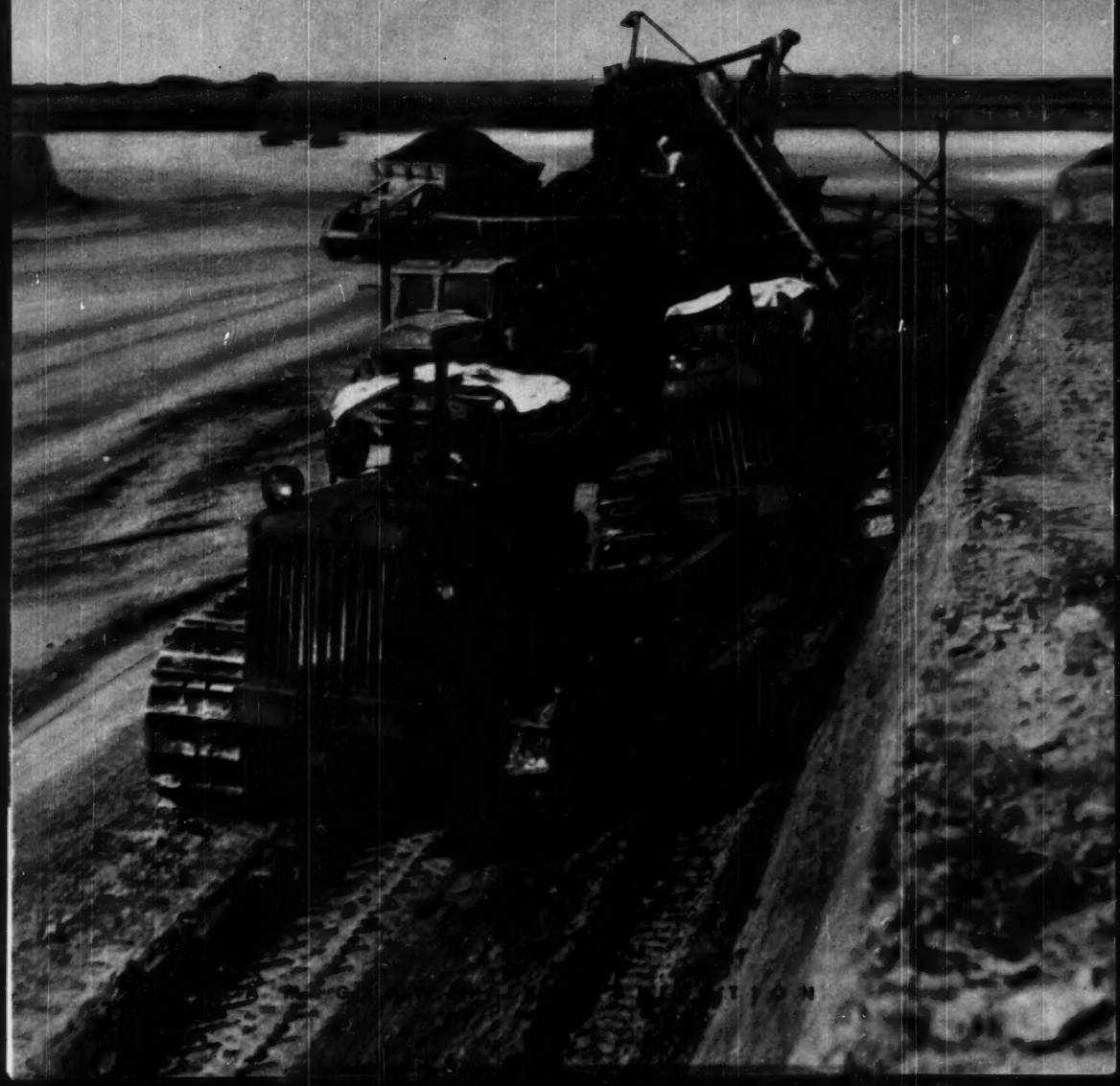
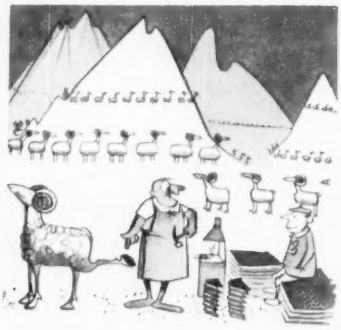
CONSTRUCTION
METHODS AND EQUIPMENT

February 1950

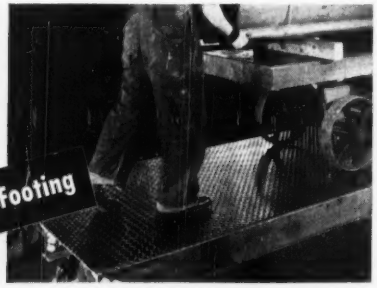


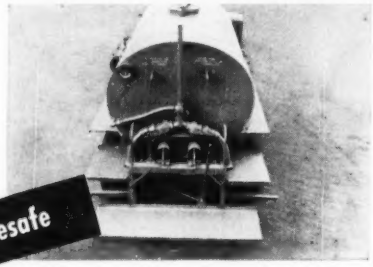


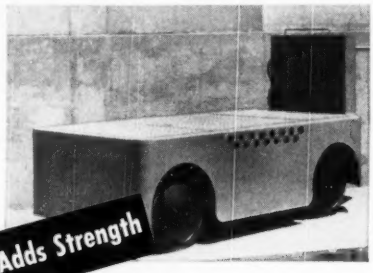
"They're lined up for miles since I started shoeing them with slip-resistant 4-WAY Safety Plate."

For greater safety under foot, in your plant and on your products

Inland 4-Way® Safety Plate







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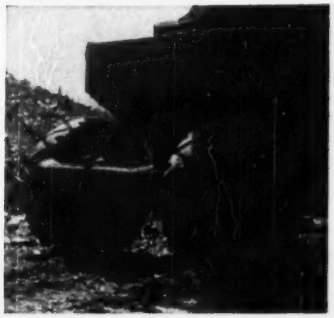
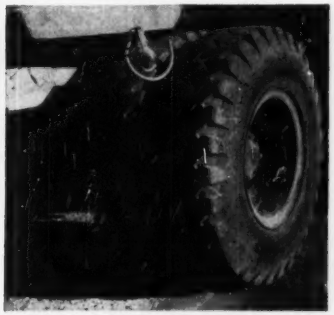


Universal all-nylon for jobs where traction is problem. Note 2-way tread, bulky wedge-shaped cleats.



These *Rock Logger all-nylons* were on a truck in extremely tough service for 2 years . . . are still going strong!

ALL-NYLON

tires give full service with no bruise or flex failures

THE B. F. Goodrich ALL-NYLON tire is now in use—and proving successful—on construction jobs and in other off-the-road operations throughout the country. The record speaks for itself: *no blowouts, no bruise breaks, no flex breaks* . . . and that includes severe operating conditions in mines where flex and bruise failures formerly were common. Now, all-nylon tires are giving operators full service with no bruise or flex breaks.

Along with nylon, B. F. Goodrich uses weftless construction. This means there are no cross-threads to hamper cord action and allow some cords to stretch out. Therefore, tire growth is reduced; tires last longer.

Nylon tires always provide big savings for contractors on jobs where heavy loads and rough terrain have made tire costs high.

The new, all-nylon construction is typical of the continuous improvements being made in truck tires by B. F. Goodrich. Long ago, BFG engineers developed special types of tires for off-the-road service. They constantly developed new improvements. One of these was the nylon shock shield, a major construction advancement now used in all B. F. Goodrich truck tires with 8 or more plies (double nylon shock shield in large, off-the-road tires).

For more information on the way B. F. Goodrich tires can do more work and save you money, see your BFG dealer or write us direct. *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER
Truck Tires

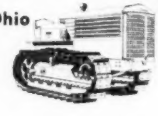
NOW A Tractor-Mounted

A Swing Loader Bucket Attachment is available for use with the Oliver-Ware Hydro-Trencher and can be installed in a few minutes.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors



OLIVER
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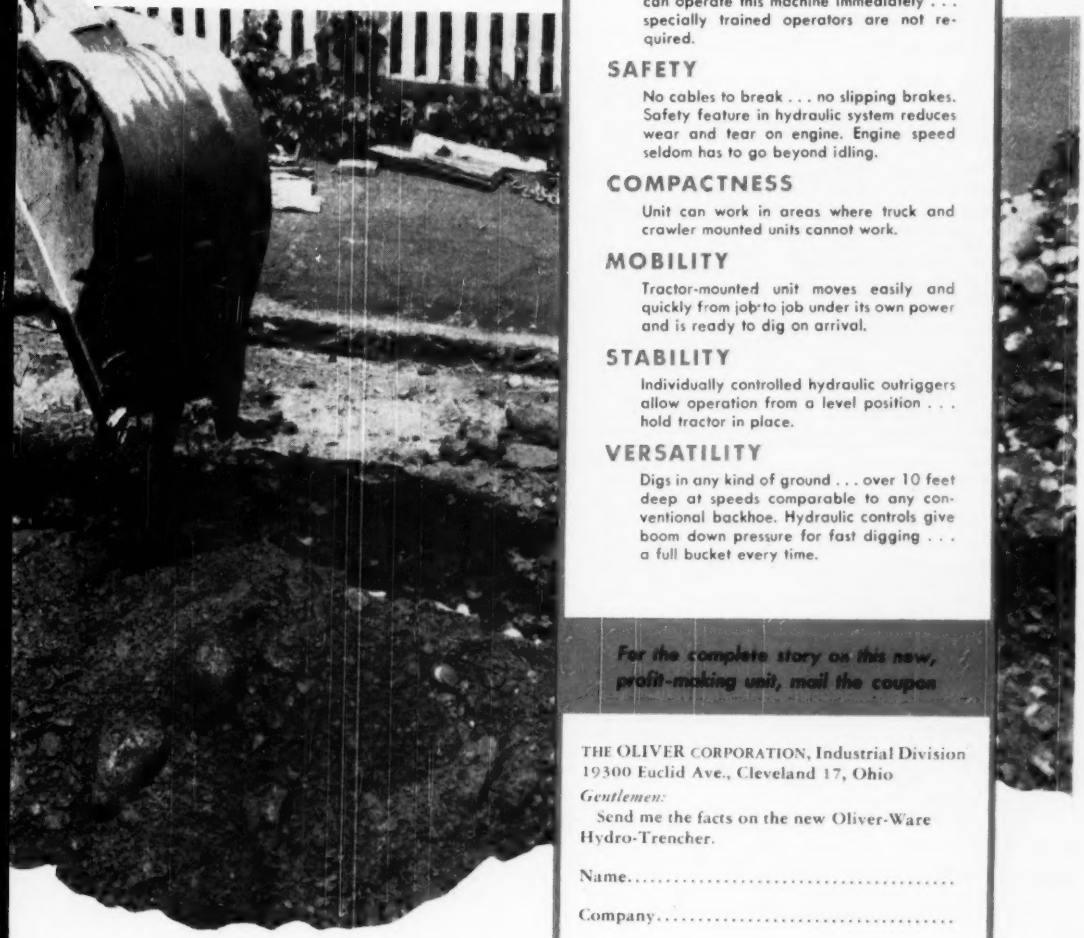
"FINEST IN INDUSTRIAL MACHINERY"

"The Sign of Extra Service"

All-Hydraulic Backhoe!

Here's a great new profit-making tool for contractors, cities, public utilities and towns. The New Oliver-Ware Hydro-Trencher is an all-hydraulic backhoe mounted on Oliver Industrial "77" or "88" Tractors. It's a smooth-acting, simply operated unit that will do a job comparable to much higher priced conventional backhoes . . . outperform many!



Note These Profit-Making Features

SIMPLE OPERATION

Smooth, finger-tip control hydraulic operation eliminates operator fatigue. Any man can operate this machine immediately . . . specially trained operators are not required.

SAFETY

No cables to break . . . no slipping brakes. Safety feature in hydraulic system reduces wear and tear on engine. Engine speed seldom has to go beyond idling.

COMPACTNESS

Unit can work in areas where truck and crawler mounted units cannot work.

MOBILITY

Tractor-mounted unit moves easily and quickly from job to job under its own power and is ready to dig on arrival.

STABILITY

Individually controlled hydraulic outriggers allow operation from a level position . . . hold tractor in place.

VERSATILITY

Digs in any kind of ground . . . over 10 feet deep at speeds comparable to any conventional backhoe. Hydraulic controls give boom down pressure for fast digging . . . a full bucket every time.

For the complete story on this new, profit-making unit, mail the coupon

THE OLIVER CORPORATION, Industrial Division
19300 Euclid Ave., Cleveland 17, Ohio

Gentlemen:

Send me the facts on the new Oliver-Ware Hydro-Trencher.

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Company.....

Address.....

City.....State.....

Now! You Get the BIG SAVINGS from Fast, Economical Air Placement of Concrete...

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BONDACT PROCESS EQUIPMENT!

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Volume 32
Number 2

CONSTRUCTION
METHODS AND EQUIPMENT

ESTABLISHED 1919

FEBRUARY 1950

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ON THE COVER—At Harlan County Dam, two International TD-24's pull a Euclid loader ingeniously altered to cut vertically. For the complete story of this neat earthmoving operation see "Side-Cutting Loader Slices Mixed Face at Pit," beginning on page 40.

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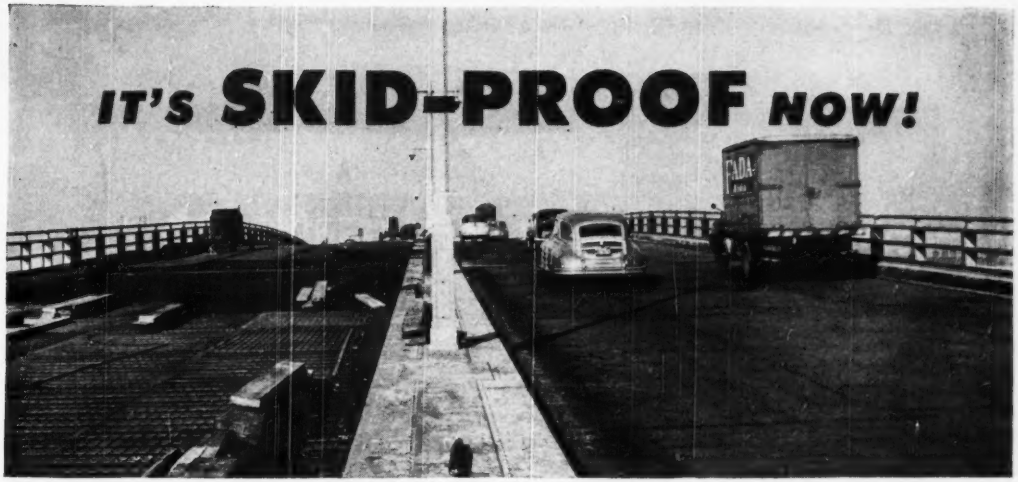
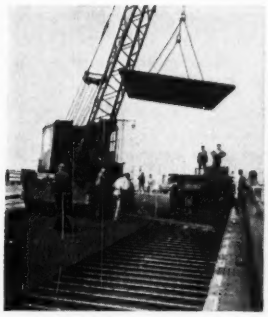
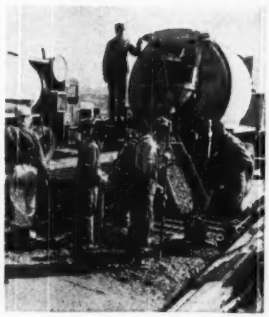
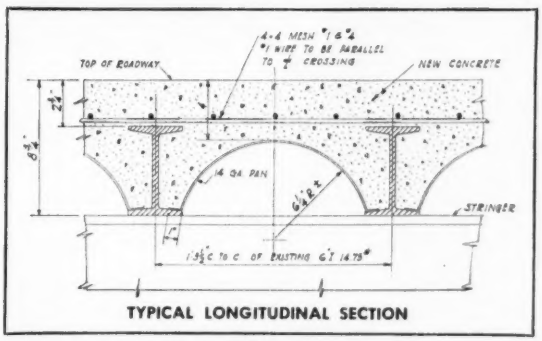


'INCOR' CONCRETE REPLACES GRID BRIDGE-DECK ON LONG ISLAND CITY APPROACH TO NEW YORK'S QUEENS-MIDTOWN TUNNEL







TYPICAL LONGITUDINAL SECTION

MIDTOWN Elevated Express Highway carries 11-million vehicles a year to and from Queens-Midtown Tunnel. Where this Highway crosses high above Dutch Kills, the steel-grid bridge-deck was hazardous when wet or icy—sand and salts fell through. For safety's sake, the City's DEPARTMENT OF PUBLIC WORKS decided to rebuild the deck with concrete.

EDGECLIFF CONSTRUCTION CORP., of Long Island City, rebuilt a lane at a time, to minimize motorists' inconvenience. Removing the grid sections, total 32 ft. by 1040 ft., required cutting 56,000 welds. Grids were lifted by crane, then permanent metal-pan forms were inserted between transverse I-beams, and mesh-reinforcing and concrete placed.

For durability and wear-resistance, and because much of the work was done in cold weather, 'INCOR'* AIR-ENTRAINING 24-HOUR CEMENT was used throughout. Gaining service strength in a fraction of the usual time, 'Incor' minimized freezing risk in this highly exposed location, where heat protection was out of the question.

Motorists were quick to notice the sure-grip of concrete under wheel. Further proof of the axiom that traffic safety *begins* with the pavement!

Reg. U. S. Pat. Off.

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Bridge paving rebuilt under supervison of:
DEPARTMENT OF PUBLIC WORKS, CITY OF NEW YORK

Consulting Engineers: **HARDESTY & HANOVER**, New York

Ready-Mix 'Incor' Air-Entraining Concrete:
TRANSIT-MIX CONCRETE CORPORATION, New York

Contractor: **EDGECLIFF CONSTRUCTION CORP.**, Long Island City

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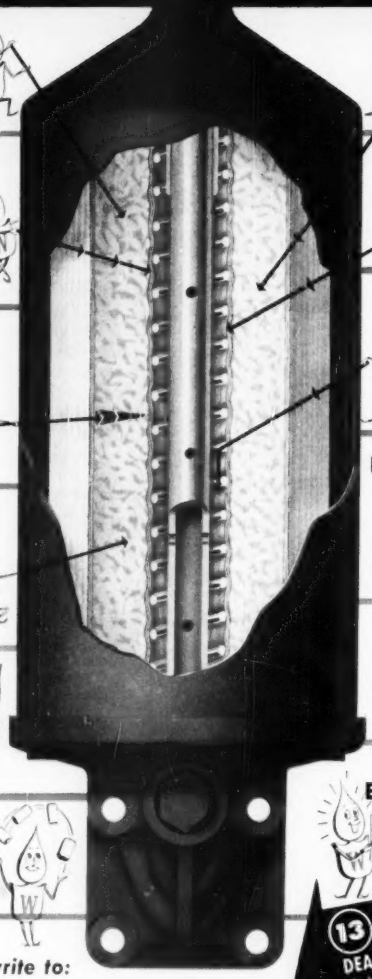

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5 TOP EFFICIENCY Channels narrow toward center, stop larger particles first, smaller ones later, hold them *all*.

6 FREE FLOW Entire outside surface filters oil; spring coil core maintains free flow.

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Leading contractors and industrial users buy "Eucs" because they are designed and built throughout for heavy off-the-highway hauling. And because Euclids are job proved for high production at the lowest cost per ton or yard moved, owners add to their fleets as more equipment is needed.

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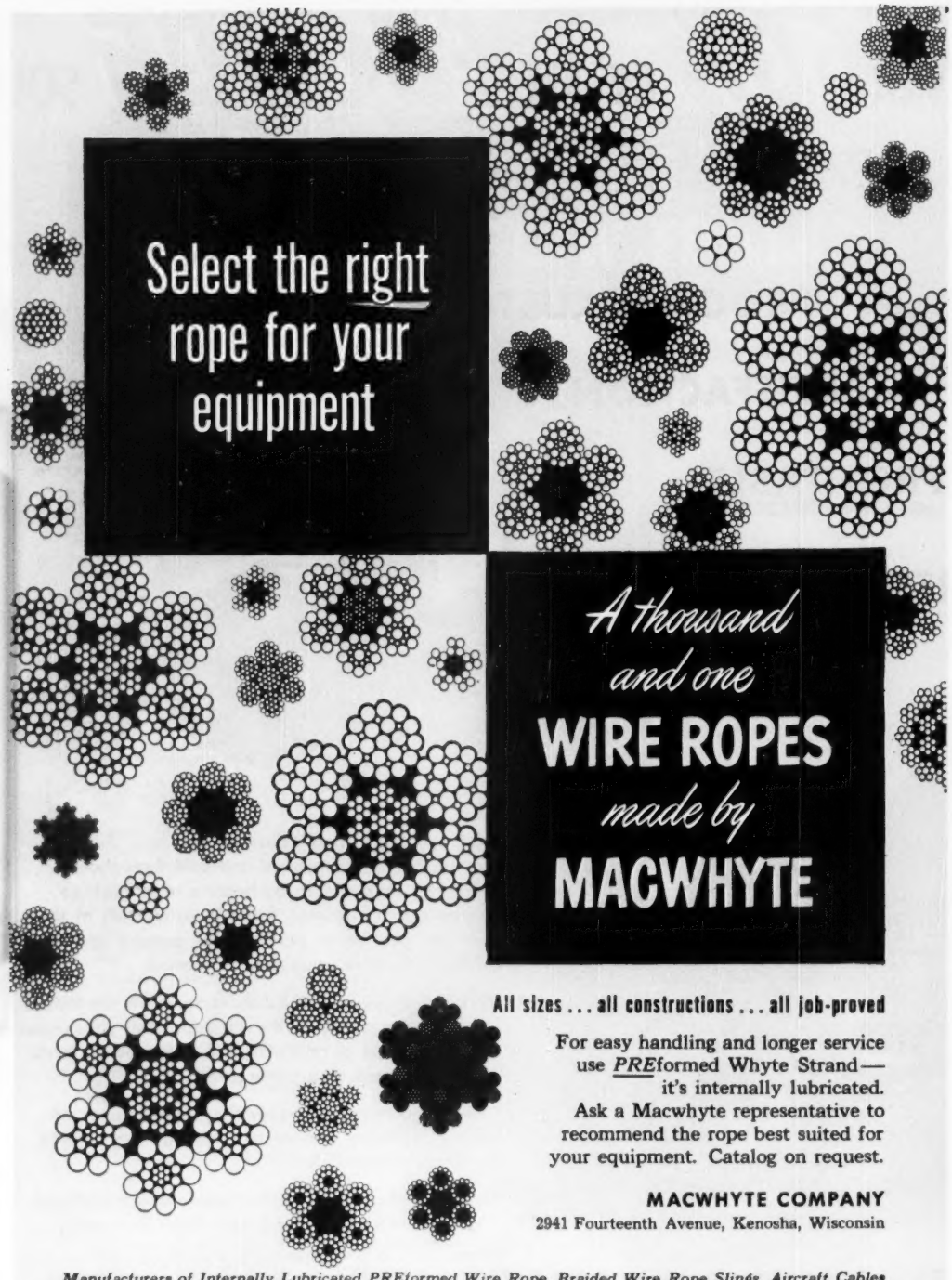

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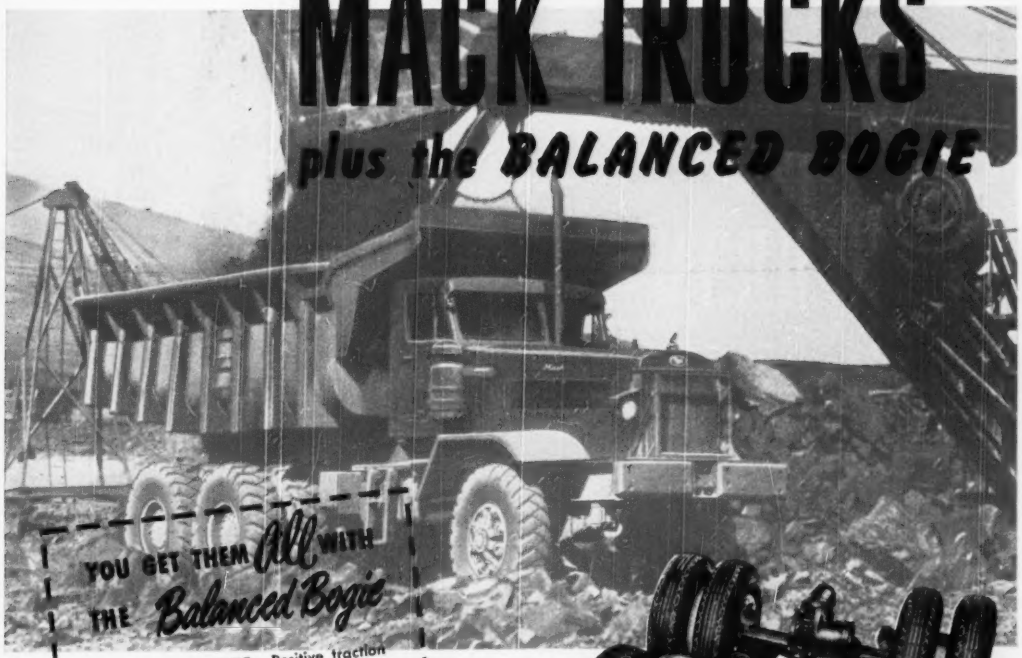
a Profit-Winning Combination

MACK TRUCKS

plus the BALANCED BOGIE



YOU GET THEM *All* WITH THE *Balanced Bogie*

POWER DIVIDER: Positive traction regardless of terrain

INTER-AXLE DIFFERENTIAL: No wind-up or overstress of driving parts

RUBBER SHOCK INSULATORS: No spring twist . . . no lubrication

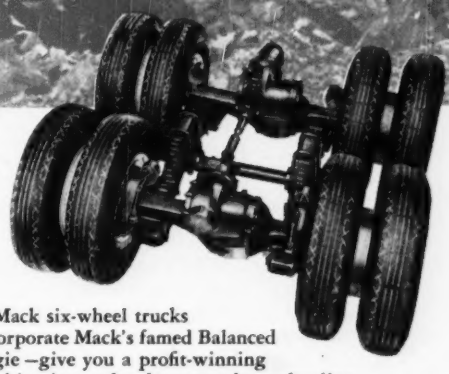
MAXIMUM FLEXIBILITY: No chassis distortion

SELF STEERING: No tire scuffing

UNIFORM TIRE LOADING: Longer tire life

UNIFORM BRAKING: Better control
No weight transfer between axles
No bogie hopping, rearing or toe-stubbing

SIMPLICITY OF DESIGN: Achieves minimum maintenance



• Mack six-wheel trucks incorporate Mack's famed Balanced Bogie—give you a profit-winning combination under the most adverse hauling conditions. Here is no makeshift assembly—but a bogie that is a component and integral part of the complete truck unit.

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FROM WAGON DRILL...

TO CHAIN SAWS

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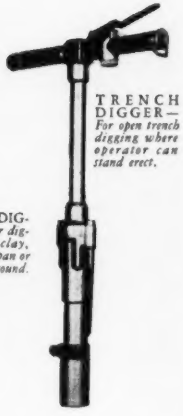
PAVING BREAKER—*Use in the hardest concrete demolition work, Street and Highway repairs.*

SHEETING DRIVER—*For driving wood or light steel sheeting.*

CLAY DIGGER—*For digging in clay, shale, hardpan or frozen ground.*



TRENCH DIGGER—*For open trench digging where operator can stand erect.*

ROCK DRILLS—*Fast drilling tools for either wet or dry drilling.*

WDR-126 WAGON DRILL—*Drills at any angle to depths of 24 feet or more.*

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Since early in 1948, the only maintenance required for the two supercharged 200 hp Cummins Diesels has been the replacement of filter cartridges and gaskets—and fuel consumption has averaged only one and one-third gallons of low-cost Diesel fuel an hour.

CUMMINS DIESEL
SINCE 1918, PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS
Cost Conscious?
CHOOSE CUMMINS DIESELS

Service

One of the more than 200 Cummins Dealers is as close as your phone!

Highspeed Diesel Engines (50-550 hp) for: On-highway trucks • off-highway trucks • buses • tractors • earth-movers • shovels • cranes • industrial locomotives • air compressors • logging yarders and loaders • drilling rigs • centrifugal pumps • generator sets and power units • work boats and pleasure craft.

CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA

EXPORT: CUMMINS DIESEL EXPORT CORPORATION • COLUMBUS, INDIANA, U. S. A. • CABLE: CUMDIEX

Adams *ALL STAR* MOTOR GRADER TEAM

Model 610—100 H.P. Diesel Engine—Weight up to 27,000 lbs.

Model 512—76 H.P. Diesel Engine—Weight up to 24,435 lbs.

Model 512—76 H.P. Diesel Engine—Weight up to 23,380 lbs.
Model 414 (Not shown) same engine—Weight up to 20,940 lbs.

Model 313—50 H.P. Diesel Engine—Weight up to 19,460 lbs.
Model 308 (Not shown)—50 H.P. Gas Engine—Weight up to 19,045 lbs.

Model 201—31 H.P. Gasoline Engine—Weight up to 10,000 lbs.

A Machine Exactly Right in Size, Power and Capacity for Every Grading Need.

From the big extra-heavy-duty Model 610, with 100 H.P. Diesel engine, to the general utility Model 201, with 31 H.P. gasoline engine, all Adams Motor Graders are of the same proved design—all capable of the same wide range of work, in proportion to size and power.

Big operator or small—highway official or contractor—you'll find in the *All-Star* Adams team a machine exactly right for your needs or budget—a machine built to deliver the fastest, most efficient and economical performance you've ever known. See your near-by Adams dealer.

J. D. ADAMS MANUFACTURING CO., • INDIANAPOLIS, IND.

Make your next motor grader an **ADAMS**

REDUCE ENGINE MAINTENANCE COSTS

Engines stay cleaner when lubricated with TEXACO URSA OIL X★★

MORE power, more trouble-free performance for your heavy-duty gasoline and Diesel engines . . . less maintenance expense for you . . . when you use *Texaco Ursa Oil X★★* because it is fully detergent and dispersive and cleans as it lubricates.

Texaco Ursa Oil X★★ is highly resistant to oxidation . . . stands up under heat and pressure. It keeps rings free, assures proper valve action, protects bearings from corrosion. This means more efficient operation . . . longer life for parts . . . less fuel consumption . . . lower maintenance costs.

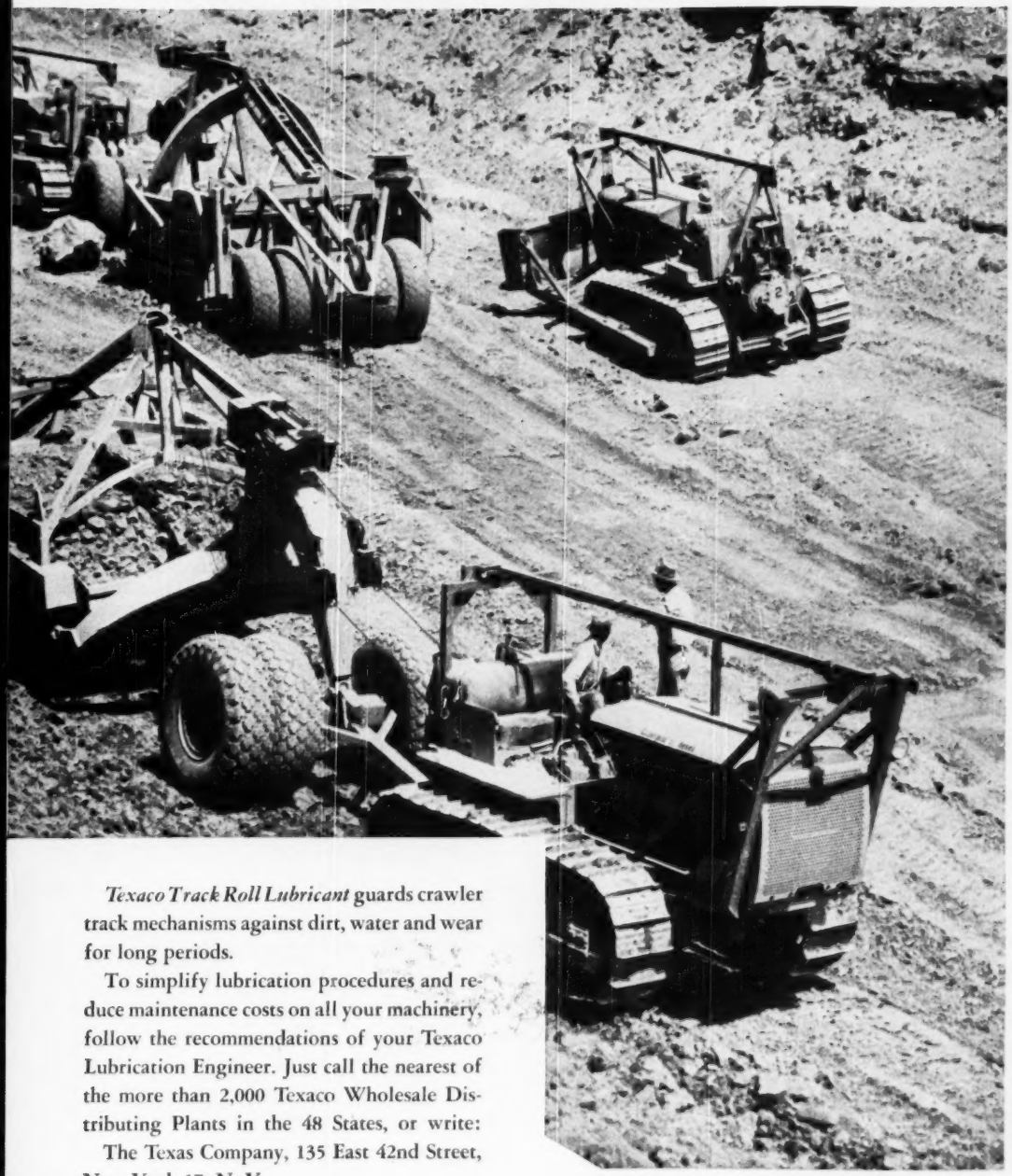
Use other Texaco Products to reduce other maintenance costs. *Texaco Marfak*, for example, will protect chassis bearings for extra hundreds of miles.

Texaco Marfak Heavy Duty seals wheel bearings against dirt and moisture, requires no seasonal change.

TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

TEXACO

TEXACO



Texaco Track Roll Lubricant guards crawler track mechanisms against dirt, water and wear for long periods.

To simplify lubrication procedures and reduce maintenance costs on all your machinery, follow the recommendations of your Texaco Lubrication Engineer. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

LOW in Cost... BIG in Performance

NEW ALLIS-CHALMERS MODEL D

WEIGHT — 8,500 lbs.

BRAKE HP. — 34.7 (famous Allis-Chalmers gasoline engine)

SPEEDS — four forward, 2.40 to 18.61 m. p. h.; reverse to 2.37

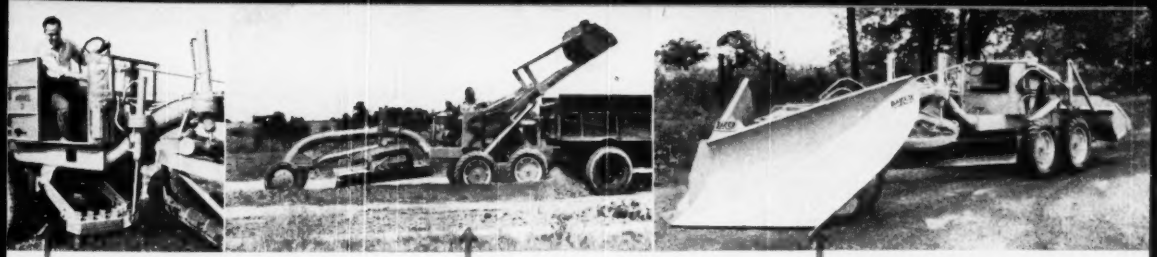
BUILDS AND CLEANS DITCHES

SLOPES BANKS—UP TO 2:1

LEVELS SUB-GRADE; ideal for finishing

ALL-VIEW CAB lifted off or replaced in a jiffy.

HYDRAULIC BLADE LIFT . . . finger-play control—fast, positive, trouble-free. Blade angle set from platform.



HYDRAULIC SCARIFIER—does a surprising job ...rear-end weight keeps teeth ripping uniformly, at desired depth—smooth, positive steering.

LOADS MATERIAL into trucks with Tractomotive Loader—from windrows and stockpiles...surplus dirt or snow.

PLOWS SNOW with specially designed Baker snowplow (backfills with interchangeable blade).

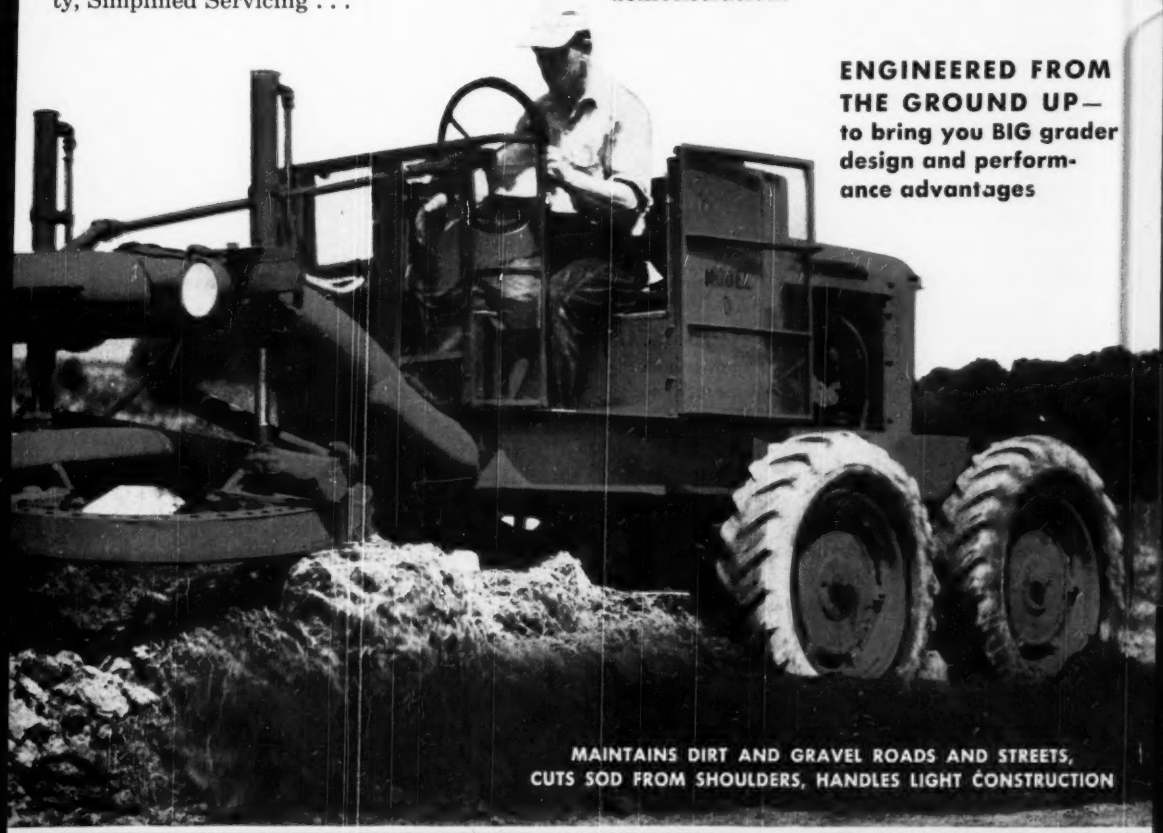
One-third the price of large motor graders

Yet has many big grader features — Tandem Drive, "Roll-Away" Moldboard, Tubular Frame, Hydraulic Blade Lift, Engine Over Drive Wheels, Drop Down Transmission, High Throat Clearance, Complete Operator Comfort, Full Visibility, Simplified Servicing . . .

. . . Plus special attachments that widen its usefulness—Rear-End Loader, Scarifier, V-Type Snowplow with interchangeable blade for backfilling and light 'dozer work. Also various other accessories.

Ask your Allis-Chalmers dealer for a demonstration.

ENGINEERED FROM THE GROUND UP— to bring you BIG grader design and performance advantages



MAINTAINS DIRT AND GRAVEL ROADS AND STREETS, CUTS SOD FROM SHOULDERS, HANDLES LIGHT CONSTRUCTION

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

there's a TON OF DUMPTOR STRENGTH

for every ton of payload

ASK TOO ABOUT KOEHRING HEAVY-DUTY ½, ¾, 1½, 2½-YD. EXCAVATORS

Write for illustrated bulletin on new 2½ yard Koehring 1005 Shovel.

Dumptors* stand up under the severest shocks of shovel-loading 1½ to 2½ yards or rock at a pass because they're built extra tough for rock handling. There's more than a ton of net vehicle weight for every ton of payload.

All-welded body sides, ends and bottoms are heavily reinforced with 4" channel ribs. More than triple strength has been built into the bottom . . . seasoned 1⅝" oak timbers are securely bolted between two layers of 5/16" steel plate. Steel-oak-steel construction cushions shocks of rock loading. Free-swinging, kick-out pan adds another tough 3/16" high-manganese steel plate for extra protection. Dumptor also has: rugged main frame, 8" ship-channels, heavily trussed . . . one-piece steel drive-axle housing and transmission case . . . 4" chrome steel drive axles . . . cast alloy steel "I" beam steering axle. All add extra strength to Dumptor chassis.

Heavy-duty construction like this assures you that Koehring Dumptors will stand up under your toughest assignments . . . that there will be little down time with Dumptors on your job. For complete facts, see your Koehring distributor today.

*TRADEMARK REG. U. S. PAT. OFF.

KOEHRING 16-S TWIN-BATCH*, MOBILE . . . VERSATILE . . . controlled ELEVATED DISCHARGE. Mixes up to 50 cu. yds. per hour on streets, highway widening, bridges, culverts, retaining walls, foundations, batching. Has 60° elevating boom, 21-foot discharge height. Travels up to 6 m.p.h. on 11x20 pneumatic tires. Get complete facts in new 16-S TWINBATCH bulletin.

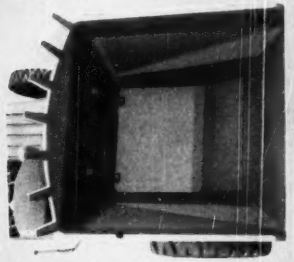
KOEHRING HEAVY DUTY

KOEHRING COMPANY

MILWAUKEE 10, WISCONSIN

SUBSIDIARIES: KWIK-MIX • PARSONS • JOHNSON

DUMPTOR BODY HEAVILY REINFORCED All-welded sides, ends and bottom of heavy-duty 6-yard Dumptor body are heavily ribbed with 4" channels. High-carbon steel gives extra strength and protection at stress points...where the abrasive action of rock handling is most severe.



KICK-OUT PAN adds an extra 3/16" high-manganese steel plate on top of sturdy Dumptor bottom . . . breaks suction of sticky materials for fast, clean dump. Big 8' x 8' top gives easy-to-hit target for fast loading over the side or end with less spillage.

1 SECOND GRAVITY DUMP . . . Operator trips body release lever . . . gravity instantly tilts scoop-shaped body. One second later, load is out and Dumptor is off for another load. No slow-moving body hoists . . . no body hoist maintenance.

CK910

Johnson Single Silos for Big Storage . . . Flexibility

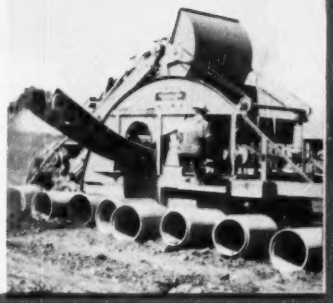
Johnson all-welded single silo provides 254, 373 and 492 bbl. cement capacities . . . has gasoline or electric-driven screw conveyors and bucket elevator . . . box-car or truck receiving hoppers . . . electric bin signals . . . aeration diffusers . . . one or two 1,000 lb. cap. batchers. Adding second silo at ground level nearly triples storage capacity.

C. S. JOHNSON
CHAMPAIGN, ILLINOIS
KOEHRING SUBSIDIARY

Straight, Clean Trenches for Sewers, Pipe, Water Mains

Parsons 250 Trenchliner*, product of more than 40 years of trencher building experience, incorporates all the desirable features that make money for you on trenching jobs. Telescoping boom for easy depth adjustment. Shifts from side to side across full Trenchliner width.

*Reg. Trademark.

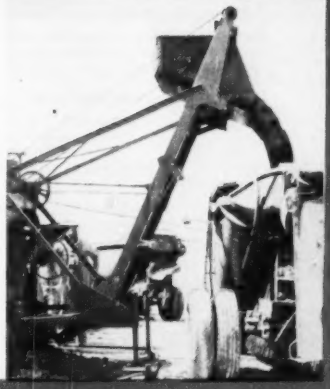


PARSONS COMPANY
KOEHRING SUBSIDIARY
NEWTON, IOWA

New Tower Loader for 11-S and 16-S Dandies*

Now you can discharge concrete batches into trucks and hoppers above ground level with Kwik-Mix 11-S and 16-S Dandies. New tower loading attachment has 9'-2" discharge height. Bucket handles full batch . . . is powered by mixer engine . . . discharges automatically at top of tower. Get full facts from any Kwik-Mix distributor today.

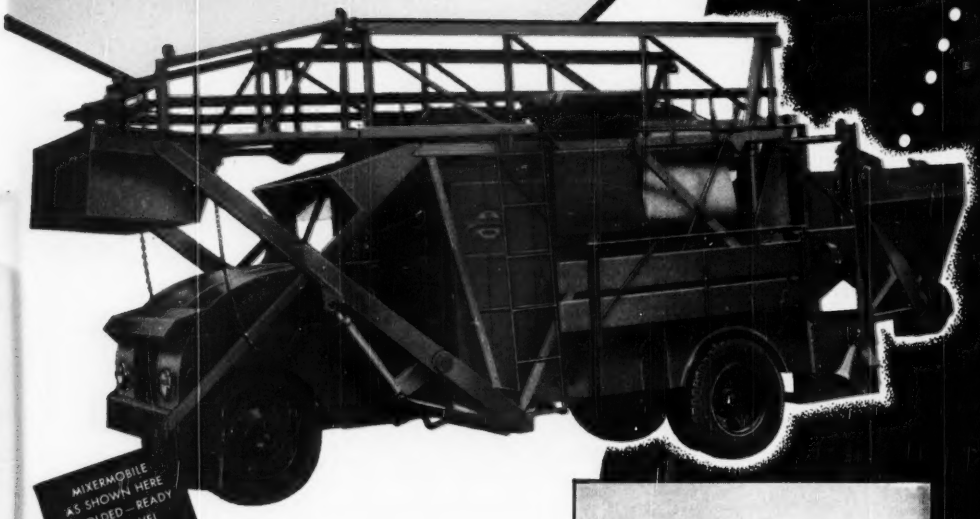
*Reg. Trademark



KWIK-MIX COMPANY
KOEHRING SUBSIDIARY
PORT WASHINGTON, WISCONSIN

It's New.. the one-yard MIXERMOBILE

A complete mobile concrete mixing unit and elevator



MIXERMOBILE AS SHOWN HERE IS FOLDED—READY FOR TRAVEL

GREATER PROFIT ON EVERY JOB...

The new one-yard Mixermobile Model M-6 built to fit all jobs, both small and large. Its complete mobility means more jobs covered every day.

SAVES money by using dump trucks—mixes concrete on the job.

SAVES cost of erecting tower—35-ft. tower attached.

SAVES cost of hoist and storage hopper—included with tower.

SAVES time—drive to the job, ready to mix in five minutes. When pouring is finished drive to next job.

Turns out 200 cubic yards of concrete per day.

Use MIXERMOBILE — the most economical method of handling concrete on the job. Cuts labor costs—no time wasted waiting for concrete. One man operates complete unit.

FEATURES: HYDRAULIC CONTROLS.

MIXER COMPLETELY ENCLOSED—controlled by specially designed shaft (gears enclosed on outside, no contact with cement.)

POWERED BY V-8 FORD ENGINE.

DISCHARGE TIMER

FOOL-PROOF WATER CONTROL SYSTEM.

WEIGHT—20,000 lbs.

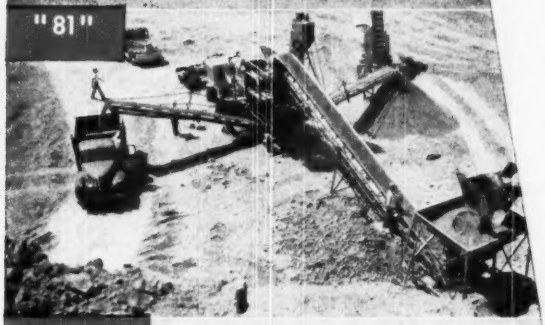
Will pass all highway limitations.

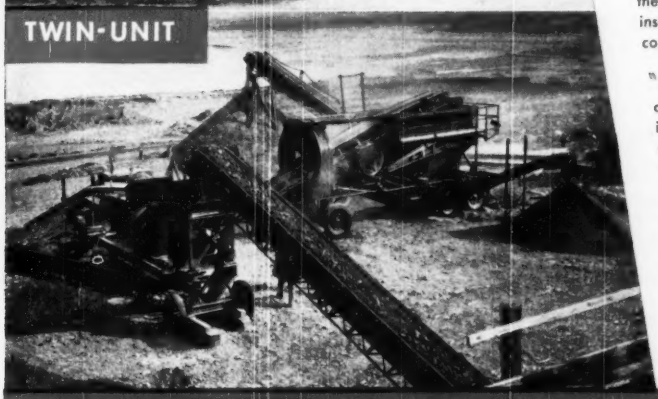
WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

- 35-FT. TOWER lifts concrete in hoist bucket and empties into tower hopper. Eliminates cost of cranes and moving to and from the job. Extension may be had by special order.
- HYDRAULIC CONTROLLED SKIP holds 1 cu. yd. Loaded directly from dump trucks.

MIXERMOBILE MANUFACTURERS

6855 N. E. HALSEY STREET, PORTLAND 16, OREGON





PORTABLE GRAVEL PLANTS

For Every Need

Whatever your production requirement may be—there's an Austin-Western Portable Crushing and Screening Plant to meet it. From the smallest single-unit plants to the magnificent two- and three-unit combinations every Austin-Western Portable Plant is correctly balanced from feed to delivery conveyor, equipped with high-capacity crushers, and engineered for maximum output at the lowest cost per ton. No matter what size or quantity you want—there's an Austin-Western plant "tailored" to fit your needs—designed to do your particular job with speed and efficiency.

"50" The "50" Plant illustrated is one of the many smaller sizes of Austin-Western Portable Plants. Bins, Crushers, Screens, Elevators and Conveyors are available in a wide variety of sizes and may be easily combined to meet any individual production problem.

"81" A 1036 Roller Bearing Jaw Crusher, combined with perfectly matched screens and conveyors, make the compact, efficient "81" the ideal plant for many installations. It's engineered from end to end for continuous "low-cost tonnage."

"101" The unrivalled production of the "101" is due to its high-speed Jaw and Roll Crushers, and its completely "balanced" design which provides unusually wide conveyors and extra-large positive-throw type vibrating screen.

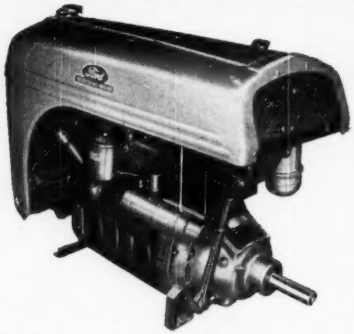
TWIN-UNIT Multiple-Unit Plants combine light transport weight, and great flexibility in operation, with the capacity necessary for tremendous production of material. Several sizes can be produced at one time.

AUSTIN-WESTERN COMPANY
AURORA, ILLINOIS, U.S.A.

BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1880

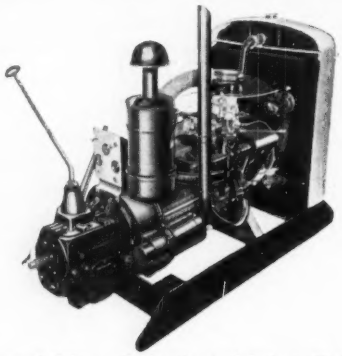
IT'S HERE...

NEW Ford "120" POWER UNIT



Removable dry cylinder liners . . . 3-ring pistons, chrome top ring . . . Moly-chrome valve seat inserts . . . Circulating cooling system with thermostat . . . Replaceable thin shell main and connecting rod bearings . . . Counterbalanced crankshaft . . . Magneto or battery ignition . . . Oil filter . . . Heavy duty oil bath air cleaner.

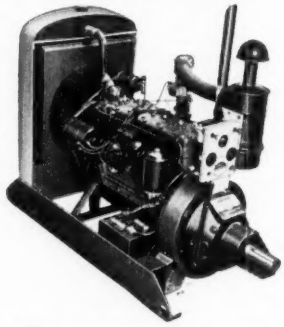
NEW Ford "226" POWER UNIT



Pad mounted oil filter . . . Full length water jacketing . . . Recirculating pressure cooling system with thermostat . . . Counterbalanced crankshaft . . . Heavy duty, replaceable thin shell copper lead bearings . . . High lift camshaft . . . Balanced carburetion (downdraft or updraft) . . . Heavy duty oil bath air cleaner.

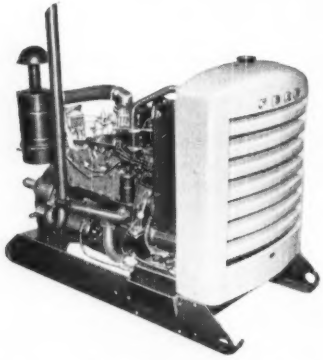
Complete

NEW Ford "254" POWER UNIT



Pad mounted oil filter . . . Recirculating pressure cooling system with thermostat . . . Autothermic pistons with chrome top compression ring . . . High lift camshaft . . . Hard faced cobalt exhaust valve (free type valves) . . . Counterbalanced crankshaft . . . Heavy duty, replaceable thin shell copper lead bearings . . . Balanced carburetion (downdraft or updraft) . . . Air cleaner.

NEW Ford "239" POWER UNIT



Dual water pumps . . . Full length water jacketing *plus* . . . Recirculating pressure cooling system with thermostat . . . Fully counterbalanced crankshaft . . . Replaceable thin shell bearings . . . Moly-chrome valve seat inserts . . . Dual downdraft carburetion . . . Oil filter and air cleaner.

RIGHT for Centrifugal Pumps . . . Arc Welders . . . Air Compressors . . . Cranes and Hoists . . . Winches . . . Railway Cars . . . Generator Sets . . . Crane Loaders . . . Feed Grinders . . . Mechanical Shovels . . . Portable Sawmills . . . Portable Well Drillers . . . Farm Combines . . . Street Flushers . . . Concrete Mixers . . . Portable Grain Mills . . . Irrigation Equipment . . . Log Yarders and Loaders—and many other applications.

Specifications of Ford Industrial Engine Power Units

Model	Cylinders	Bore and Stroke	Displ. cu. in.	Dyn. B.H.P.	Max. Torque	Equipment Available
120	4	3¼ x 3¼	120	38 @ 2400	92#' @ 1600	Clutch; SAE #5 housing; power take-off; Ford housing; 3- or 4-speed transmission; governor. (Available as closed type power unit or engine assembly.)
226	6	3.3 x 4.4	226	80 @ 2400	182#' @ 1200	Clutch; SAE #3 or #4 housing; power take-off; Ford housing; 3-, 4- or 5-speed transmission; governor. (Available as closed or open type power unit, or engine assembly.)
239	V-8	3¼ x 3¼	239	85 @ 2400	187#' @ 1600	Clutch; SAE #3 or #4 housing; power take-off; Ford housing with 3-, 4- or 5-speed transmission; governor. (Available as closed or open type power unit, or engine assembly.)
254	6	3.5 x 4.4	254	95 @ 2400	212#' @ 1200	Clutch; SAE #3 or #4 housing; power take-off; Ford housing; 3-, 4- or 5-speed transmission; governor. (Available as closed or open type power unit, or engine assembly.)
337	V-8	3½ x 4⅛	337	117 @ 2400	257#' @ 1600	Clutch; 5-speed direct-in-fifth transmission; overdrive transmission, direct drive power take-off. (Available as closed or open type power unit, or engine assembly.)

FORD

Industrial Engine Power Units ARE RIGHT 3 WAYS for your job!

1. **RIGHT POWER**—five great models in wide variety of units. Each one ready to run!
2. **RIGHT FEATURES**—all the latest advancements of Ford's famed progressive engineering.
3. **RIGHT SERVICE**—as near as your nearest Ford Dealer, clear around the world.

Line of NEW Ford INDUSTRIAL ENGINE POWER UNITS!

NEW Ford "337" POWER UNIT

Drop forged fully counterbalanced crankshaft, hardened journals . . . Heavy duty, replaceable thin shell copper lead bearings . . . Hard faced cobalt exhaust valves (free type valves) . . . Autothermic pistons, chrome top ring . . . Dual centrifugal water pumps . . . Full length water jackets . . . Recirculating pressure cooling system with thermostat . . . Dual downdraft carburetion . . . Oil filter and air cleaner.

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

For Special Literature on Ford Industrial Power Units, use this coupon . . .

Industrial Engine Department

FORD MOTOR COMPANY

DEARBORN, MICHIGAN

● Ford Industrial Power Units are now available in five great models . . . four, six and V-type eight cylinder . . . 120 to 337 cu. in. displacement. *COMPLETE* with radiator . . . instrument panel and S.A.E. or Ford type housings. Foot or skid mounted. Closed and open types. Made throughout to Ford's famed hi-precision manufacturing standards. Completely tested and *READY TO RUN!*

Ford Dealers, Ford District Sales Offices and the Ford Industrial Engine Department are at your service in developing engineering recommendations showing how Ford Industrial Power Units can be most effectively applied to your job. *Mail coupon below for Ford Industrial Power Unit Folder.*

Send me comprehensive literature about the new Ford Industrial Power Units. Address: **Industrial Engine Dept., Ford Motor Co., Dearborn, Mich.**

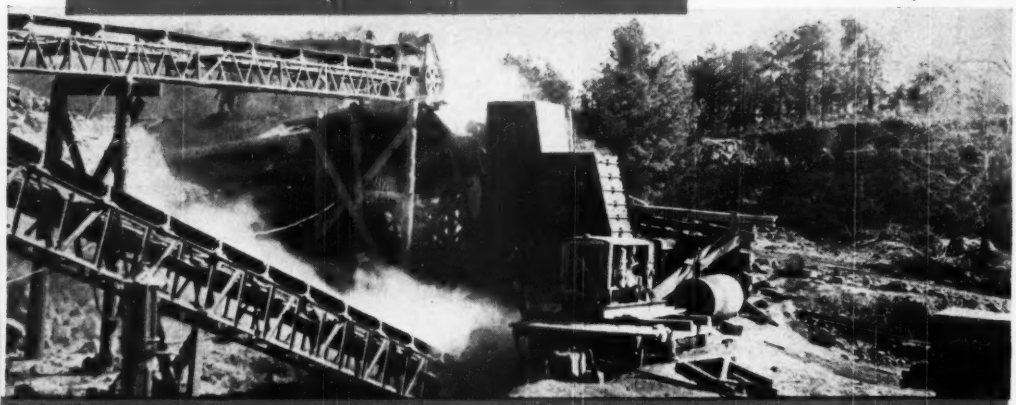
NAME_____
(Please print)

STREET_____

CITY_____ STATE_____

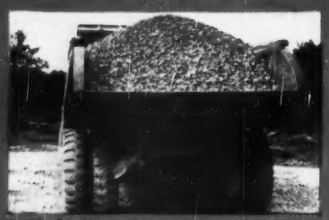
In Georgia limestone . . .

Dual Impact Action does it again

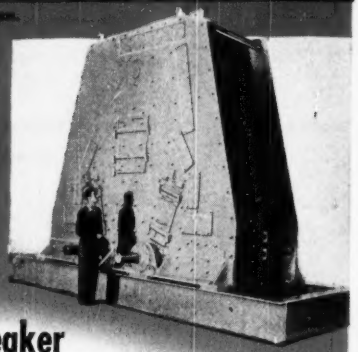


On the job in North Georgia quarry, operated by Lambert Brothers of Knoxville, Tenn.

From this New Holland Model 5050 Breaker accepts run-of-quarry rock up to 50" . . .



To this Produces clean, cubical aggregate passing 4" in one operation . . .



New Holland Model 5050 Double Impeller Breaker

reduces 50" material to commercial sizes in single pass . . .

• **Like all New Holland Breakers,** the new Model 5050, recently installed by Lambert Brothers, is a field development . . . designed to work in all types of rock, under all conditions . . . built to produce maximum aggregate at minimum cost. Simple, sturdy construction keeps costs *down*—production *up*.

Here are some quick facts—more on request:

Produces up to 400 tons per hour on 300 h.p. Heavy duty steel outer plates. Interior lined with manganese steel wear plates. Spherical roller bearings. All parts accessible; all adjustments easily made by average workman. Mounted on heavy I-beams to simplify installation. Weight 54 tons.

New Holland Double Impeller Breakers are used, recommended by operators everywhere. Get the facts. Write for complete information including location of installation nearest you. Address: Department C-20

Read what W. E. Lambert, of Lambert Brothers, Knoxville, Tenn., says about New Holland Model 5050 Double Impeller Breaker shown above.

"The ability of this breaker to reduce 50" material to commercial sizes in one pass is remarkable . . ."

W. E. Lambert

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of the Sperry Corp.

Plenty of Power...

IN McCULLOCH 3-25

HORSEPOWER POUNDS

AMAZED! That's the only way to describe the way woodsmen feel when they first try out a McCulloch 3-25. They're amazed to find that a saw so light can cut so fast.

Here are some reasons

Horsepower, *plus* engine torque characteristics, internal friction conditions, and chain efficiency actually determine how fast a chain saw will cut. The McCulloch 3-25 has a 3-horsepower special McCulloch engine designed to match exactly the requirements of chain sawing. All bearings are anti-friction. And McCulloch chains are designed for maximum cutting efficiency in all types of wood.

OTHER FEATURES, TOO ★ Automatic clutch ★ Manually operated built-in chain oiler ★ Full-power sawing in any position or at any angle ★ Kickproof rewind starter ★ Easily accessible ignition breaker points ★ Conveniently grouped engine controls ★ Weight of less than 25 lbs. complete with 18" blade and chain.

SEND FOR FREE LITERATURE AND NAME OF NEAREST DEALER

McCULLOCH MOTORS
corporation
6101 West Century Boulevard
Los Angeles 45, California

THERE'S A McCULLOCH FOR EVERY LOGGING JOB

20" Model 5-49 . . . $385

50" Model 5-49 . . . $415

18" Model 3-25 . . . $295

30" Model 5-49 . . . $395

60" Model 5-49 . . . $425

24" Model 3-25 . . . $305
30" Model 3-25 . . . $315

40" Model 5-49 . . . $405

20" 5-49 Bow Saw . . . $425

15" 3-25 Bow Saw . . . $325

All prices f. o. b. Los Angeles

NATIONWIDE SALES AND SERVICE

Which One is You ?

type one

Do you drill holes all over the lot? A few in this cut—a few for that footing? Then you'll choose the lightweight LCM—the ideal wagon drill for use where moves are frequent.

type two

Do your jobs call for fast drilling? Big footage on every shift? Then you'll want the universal URM—for the last word in wagon drill efficiency and performance.

type three

Do you run into a lot of heavy rock excavation—with cuts up to 40 feet deep? Then the Gardner-Denver WD is the wagon drill for you. It's specially designed for deeper holes.

LCM FEATURES:

Lightweight—easy to move
Positive feeding pressure
Convenient feed and drill controls
Highly maneuverable
Equipped for 6-foot steel changes

URM FEATURES:

Simple, responsive controls
Maintains correct bit pressure
Positive, effortless blowing
Adjustable wheels and mast
Handles 6-foot steel changes

WD FEATURES:

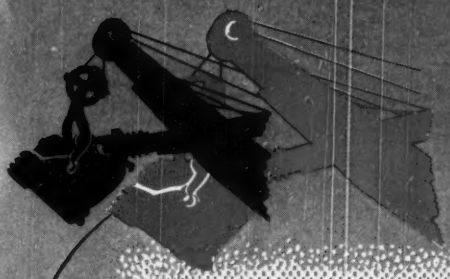
Extra powerful blowing
Pneumatic feed
Power operated mast
Adjustable to any position
For 10 or 15-foot steel changes

Whether your drilling pattern fits Type 1, 2 or 3—choose a Gardner-Denver Wagon Drill for faster, easier drilling. Write for Bulletin WD-1.

GARDNER-DENVER *Since 1859*

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada) Ltd., Toronto, Ontario



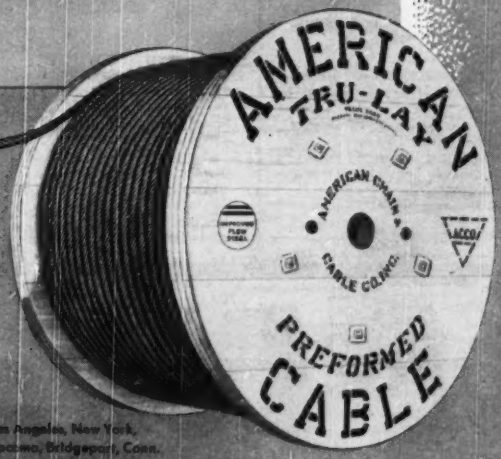
TRU-LAY

. . . all you need to remember about QUALITY

You can specify the Size, Grade and Construction of wire rope with figures and symbols. But the only way to specify Quality is by name—the name that represents the manufacturer.

TRU-LAY Wire Rope is preformed. Moreover, it's made by the *originators* of the preforming process—pioneers in the wire rope field—men who have spent years finding ways to improve wire rope so that it will serve better and longer.

To make sure of high quality in the wire rope you buy or specify, you need remember only one name—TRU-LAY.



ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Seattle, Tacoma, Bridgeport, Conn.

AMERICAN CHAIN & CABLE
AMERICAN CABLE DIVISION

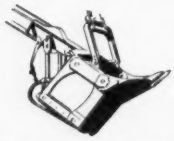
In Business for Your Safety

MORE for your MONEY IN THIS NEW 3/4 YD. LORAIN TL-25

Thew 25 Lorain

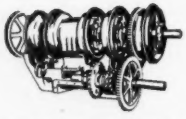
Gives You More of Everything . . .

MORE OUTPUT . . .



The Lorain TL-25 is the newest machine in the 3/4 yd. class . . . It's packed with power and speed for fast, snappy performance to produce more working cycles per minute and more yardage per day . . . The shovel has an independent cable crowd with plenty of digding power delivered right where you need it — at the dipper teeth.

MORE SIMPLICITY . . .

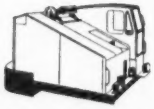


Here's a machine that's easier to understand, quicker to service, simpler to maintain . . . Each major component — clutch shaft (illustrated), engine, hoist shaft, cab, crawler propelling mechanism, may be removed and replaced as one unit. All 5 clutches are identical — you'll find more interchangeable parts on the TL-25 than on any other machine.

MORE CRAWLER MOUNTINGS

3 Crawler mountings are available for the TL-25 — all have 2 travel speeds, are chain driven, are equipped with oil-enclosed propelling mechanism, have 22" wide drop-forged treads and 4-way tread and travel lock . . . Crawlers are available in 10 ft. and 12 ft. lengths and in the wide gauge model with 11' 8" overall width for straddling ditches.

MORE "EXTRAS" . . .

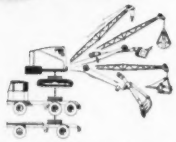


There's no charge for desirable "extras" when you buy a Lorain TL-25. All desirable "extras" are standard equipment including — 2 crawler travel speeds in both directions; power load-lowering; operating lights; electric starter and generator . . . The Lorain TL-25 is not a stripped-down, priced-down machine . . . It's a complete ready-to-work package.

MORE "LONG-LIFE" FEATURES . . .

The Lorain TL-25 abounds in new, modern features for longer life . . . All gears are machine cut; all gears, except 2, are oil-enclosed; 18 anti-friction bearings are used on the clutch shaft alone; turntable hook rollers are mounted on drop-forged brackets; crawler treads and rollers are drop forgings, with heat-treated wearing surfaces . . . And there are scores more of such features.

MORE SELECTION . . .



The Lorain TL-25 is only one machine in the TL-"Series" line of products which offers an array of capacities, interchangeable booms and mountings that makes it possible for you to select the right machine for your job from 90 possible combinations. Among these is a selection of 12 different rubber-tire carriers of 2-engine and single-engine types.

Send For This New Book!

Here's a book you must read to keep up-to-date on the latest in shovel-crane developments — it shows primary design details, explains what they will do for you on your jobs. Ask your nearby Thew-Lorain Distributor for a copy . . . or write to . . .

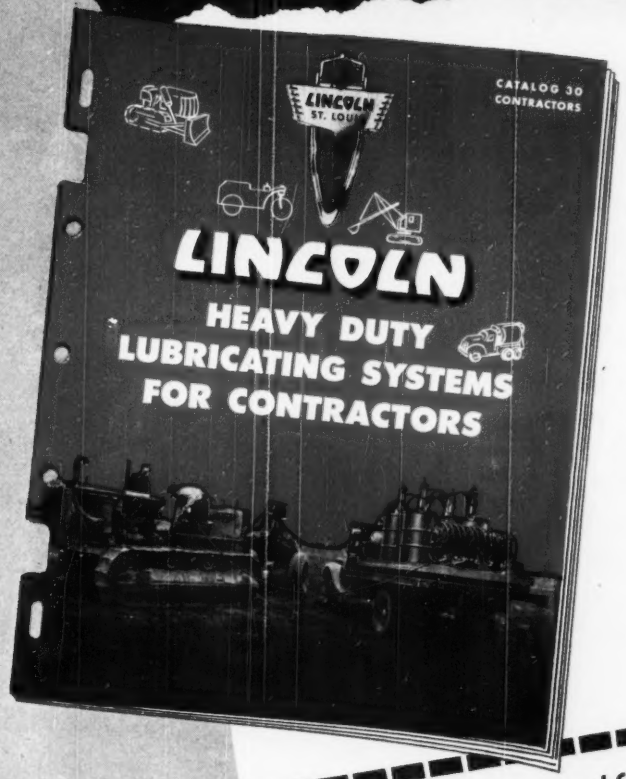
THEW SHOVEL CO.
LORAIN, OHIO

THEW LORAIN®

SHOVELS • CRANES • CLAMSHELLS • DRAGLINES
HOES • MOTO-CRANES

Thew 25 Lorain

AVOID Costly Breakdowns... Wear... Loss of Productive Time... Provide On-the-Job Power Lubrication



Send for Lincoln's New Catalog Today!

Lincoln's New Catalog of portable Lubrication Departments for Contractors shows you how to reduce lubrication time to a minimum—eliminate contamination and waste of lubricants—and make it possible to keep equipment properly serviced at all times.

LINCOLN COMPLETE HEAVY DUTY LUBRICATING SYSTEMS FOR CONTRACTORS ARE DISTRIBUTED NATIONALLY THROUGH LEADING INDUSTRIAL WHOLESALERS LOCATED IN PRINCIPAL CITIES

Send Coupon Today for Your Personal Copy of This Helpful Catalog

LINCOLN ENGINEERING CO.
5702-19 Natural Bridge Ave.
St. Louis 20, Missouri

Please send me a copy of your new Contractors Catalog No. 30.

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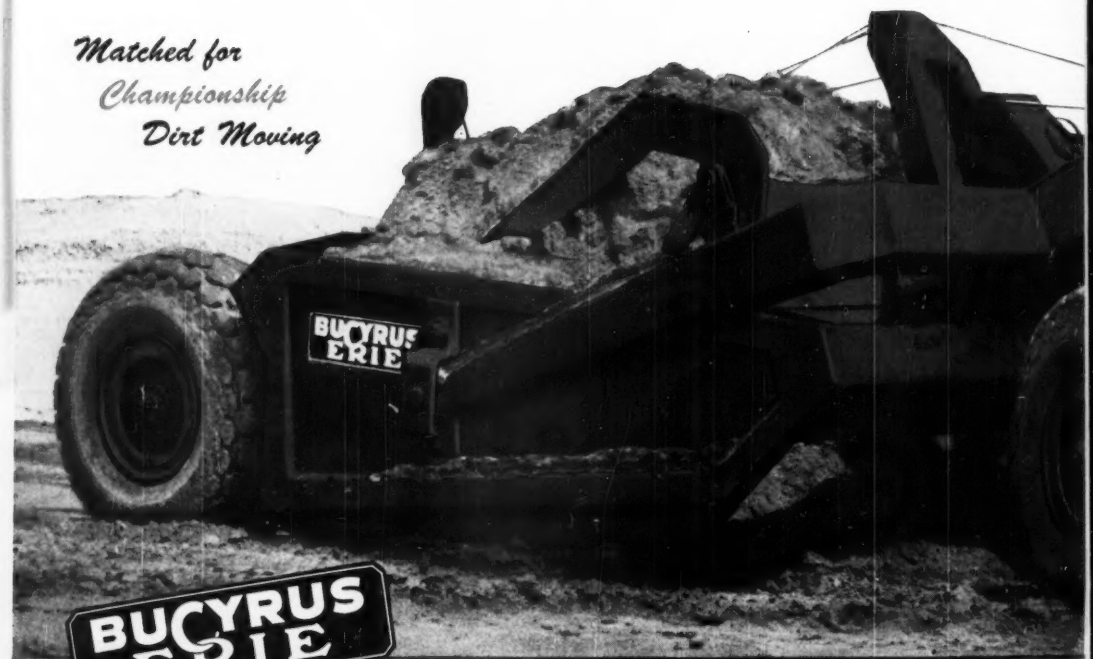
LINCOLN
LUBRICATING EQUIPMENT • • •

LINCOLN ENGINEERING COMPANY
5702-19 Natural Bridge Ave.
St. Louis 20, Missouri

Meet The 'BIG

Matched for Championship Dirt Moving



BUCYRUS ERIE

See Your INTERNATIONAL

RED' Team

Get acquainted with the combination that's matched for championship dirt moving: the "BIG RED" team — new International TD-24 tractor and Bucyrus-Erie B-type scraper. Owners are proving its superior performance on earthmoving jobs everywhere . . . are completely revising accepted time cycles for crawler tractor-scraper combinations.

Look over this team of matched equipment. See for yourself what the "BIG RED" team can do to cut your dirt costs. The tractor is the most powerful in the world; it is built by the largest company manufacturing crawler tractors. The scraper takes full advantage of tractor power, is built by the world's largest and oldest manufacturer of earthmoving equipment. This unequalled experience means sound design, money-making "BIG RED" performance!

184TSOC

BUCYRUS-ERIE COMPANY, South Milwaukee, Wis.

Industrial Tractor Distributor

1 Simplified, full-floating charging hopper assembly. Improved seal design assures low maintenance cost.

2 Improved overflow-type water tank; non-breakable gauge glass and non-freeze valves.

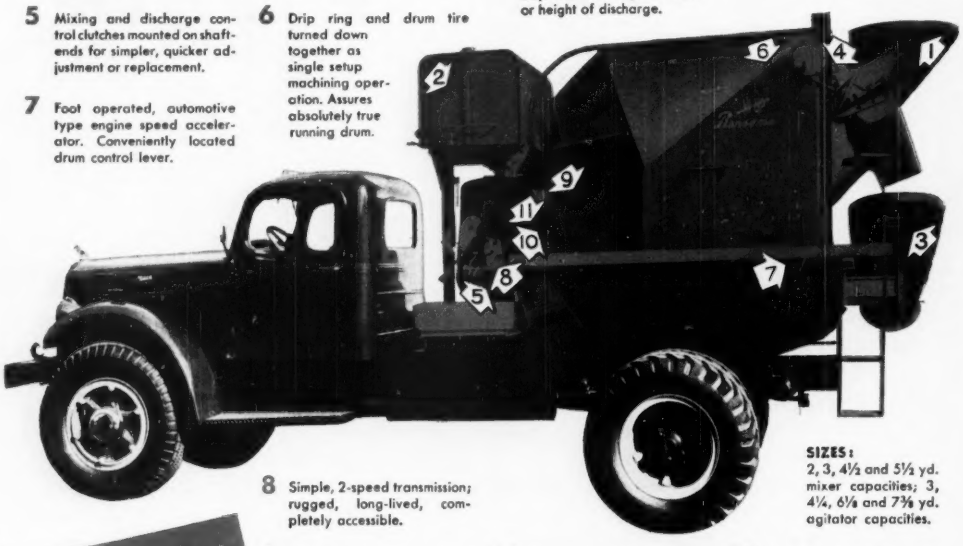
3 Rigid, quick - detachable chute support bracket. Easily swung clear when discharging into hoist buckets; quickly adjustable for slope of chute or height of discharge.

4 Renewable drip ring is quickly, easily, accurately replaced and locked on drip ring flange by 12 cap screws.

5 Mixing and discharge control clutches mounted on shaft-ends for simpler, quicker adjustment or replacement.

6 Drip ring and drum tire turned down together as single setup machining operation. Assures absolutely true running drum.

7 Foot operated, automotive type engine speed accelerator. Conveniently located drum control lever.



SIZES: 2, 3, 4½ and 5½ yd. mixer capacities; 3, 4¼, 6⅛ and 7⅜ yd. agitator capacities.

8 Simple, 2-speed transmission; rugged, long-lived, completely accessible.

9 Chain-driven drum reduces weight without loss of strength.

10 Trunnion bearing design, with double race bearings for maximum flexibility.

11 Fabricated, all-steel drumhead. Conical section with steel reinforcing ribs absorbs shocks.

NEW!

THE 1950 LINE OF *BLUE BRUTES* HI-UPS

Gives You Every Money-Saving Feature!

Men like you helped design this newest Blue Brute Hi-Up! Ready-mix operators throughout the world were consulted, and their very practical suggestions were valuable aids to Worthington-Ransome's century-plus of experience.

The result is an ultra-modern truck mixer — not only a technical triumph in lightness of weight without loss of strength, but an on-the-job performer unequalled for trouble-free operation, easy accessibility of wearing parts and low cost maintenance. The following typical testimonial shows you why:

Our trucking foreman is particularly complimentary of the new Hi-Up's well designed transmission system, including the transmission itself. Our shop service men are complimentary of the unit's ability to properly mix and discharge low slump concretes. We compliment you on a well engineered and well designed truck mixer.

SOUTHERN MATERIALS CO., INC.
J. W. Roberts, *Vice President*

Give the new Hi-Up's features a good going-over — one by one. You'll agree that they add up to more concrete at lower cost — and that *there's more worth in a Blue Brute*. For further facts, see your nearby Worthington-Ransome Distributor, or write for Bulletin.

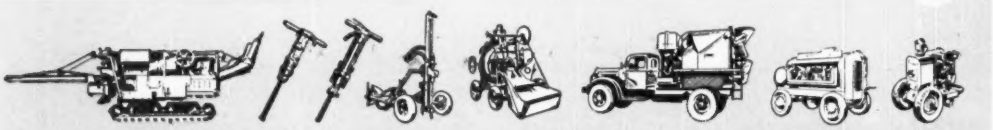
WORTHINGTON

Worthington Pump and Machinery Corp.
Construction Equipment Department
Harrison, New Jersey

Distributors In All Principal Cities

BUY BLUE BRUTES

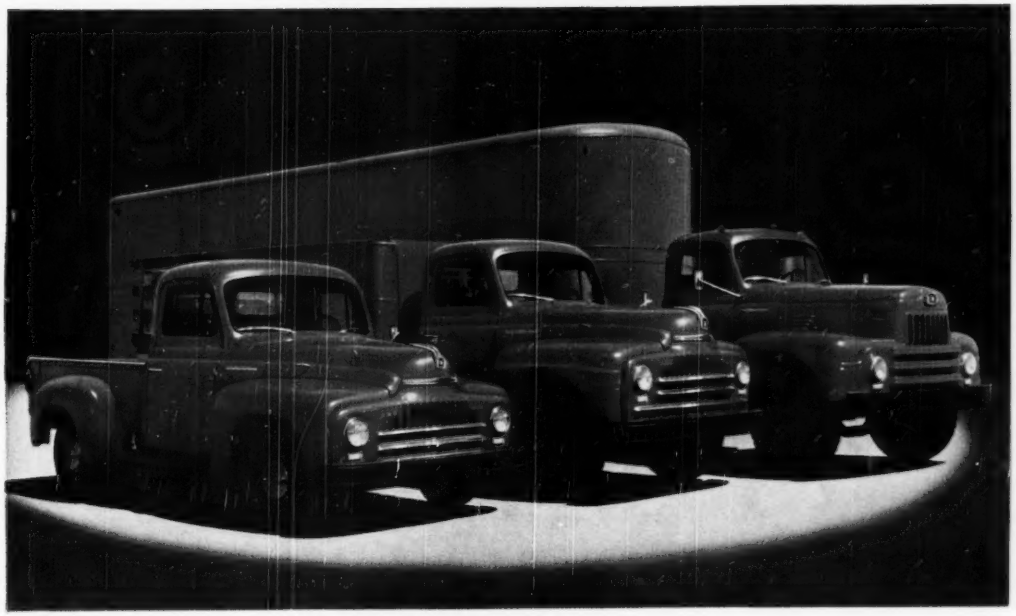
RO-1



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

Announcing—ALL NEW—ALL PROVED

INTERNATIONAL TRUCKS



Every model *Heavy-Duty Engineered* to save you money!

Now International puts you squarely in the driver's seat—with a complete new line of completely new trucks!

Every single new International Truck from 4,200 to 90,000 pounds GVW is heavy-duty engineered to give you lower maintenance and operating costs.

Let the facts tell that story:

Fact No. 1: for 18 straight years Internationals have led in sales of heavy-duty trucks (16,001 pounds and over GVW). The men who buy heavy-duty trucks buy on a basis of performance. They choose Internationals.

Fact No. 2: the same management men, the same engineers, the same test experts, the same production men who kept Internationals first in the heavy-duty field, have developed *every* new International Truck.

Every model offers new high standards of comfort and easy handling

Here's relaxing roominess! Here's all 'round visibility! Here's a comfortable, adjustable seat! Yes—you get everything in the Comfo-Vision Cab!

You have full visibility in the one-piece Sweepsight windshield. That convenient two-cluster instrument panel puts everything right in front of your eyes.

And when the truck starts to roll, you find that new Super-steering right for position, and positive control.

AND TALK ABOUT FEATURES . . .

Every new International Truck offers new improvements throughout!

NEW Functional Styling—Smart brawny appearance combines modern design with extreme practicability.

NEW Engine Accessibility—Special fender and hood design provides extra working space between engine and fenders—hoods easily removed.

NEW Brake Systems—hydraulic or air. Faster-acting, surer-stopping, longer-wearing—more efficient braking with less effort.

NEW Outdoor Visibility—Giant, one-piece scientifically curved Sweepsight windshield, large side windows, two rear windows.

NEW Valve-in-head engines—All test-proved for greater power, greater economy, greater stamina, greater efficiency.

NEW Steel-flex Frames—Designed to provide an extra margin of strength combined with the right amount of flexibility.

NEW Comfo-Vision Cab—Model for model "the roomiest cab on the road"—with comfort cushions, adjustable seats, controlled ventilation.

NEW Specialized Transmissions—Types and gear ratios for any job . . . three-speed, four-speed and five-speed with direct drive or overdrive in 5th.

NEW Load-balanced Wheelbases—Shorter wheelbases for standard body lengths provide better load distribution, better maneuverability.

NEW Super-Maneuverability—More positive control from a more comfortable position; new wide-tread axles assure the shortest practical turning circle and greater stability.

NEW Rear Axles for any job—Wider, sturdier rear axles—hypoid single-speed, double-reduction and two-speed with electric shift.

NEW Cradle-Action Springs—Longer springs for greater riding ease . . . stronger springs, sturdier mounting and new spring suspension for longer life.

Plus dozens of new features and refinements throughout every truck!

Proved in the mountains!

Proved on the Belgian Blocks!

Proved in heavy snowfall!

Proved on the twist course!

Every model proved under actual operating conditions!

There wasn't any price tag on the test program to prove the new International Trucks.

It was directed by men whose life work has been to develop better truck transportation. Test drivers were chosen as carefully as you do any key workers. All-outdoors was used for proving grounds. Laboratory analysis tests were backed up by track tests, then by actual road tests. Test convoys were run 'round the clock.

That's why every all-new, all-proved International Truck is right and ready for you *now!*

Call or visit your International Truck Dealer or Branch

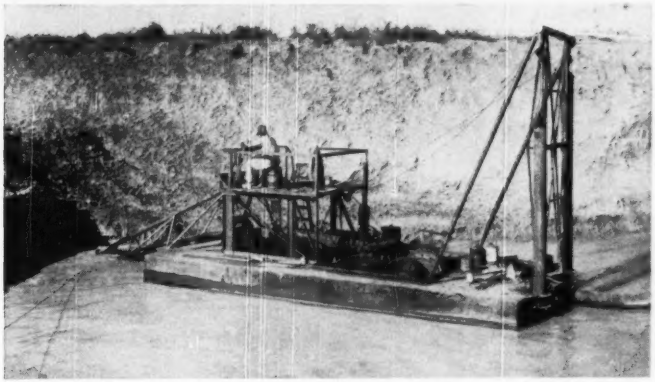
International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks Industrial Power . . . Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars" NBC, Sunday afternoons

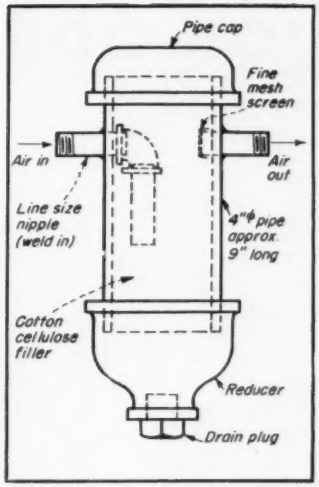
INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

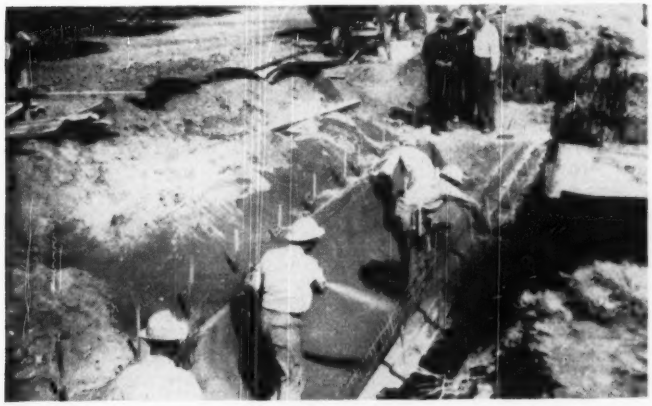
HOW THEY DID IT

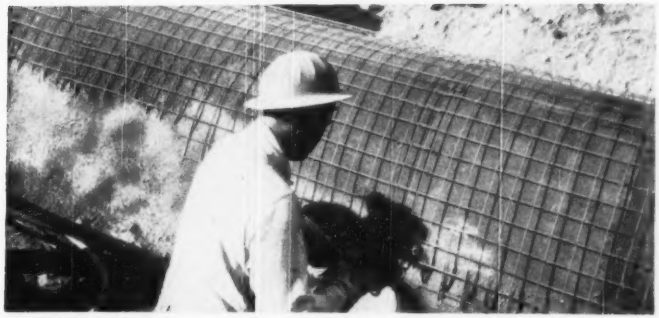


VEST POCKET DREDGE digs 100 yd. per hr. to discharge 200,000 yd. of material from ship anchorage near Harlingen, Tex. Affoiter & Garnett, Rio Hondo (Tex.) contractors, built rig, put in General Motors diesel to drive 8-in. pump, cutter head and five winches.



SIMPLE TRAP takes moisture from aeration lines of cement silos or bulk storage bins. It's job-made from standard pipe and fittings

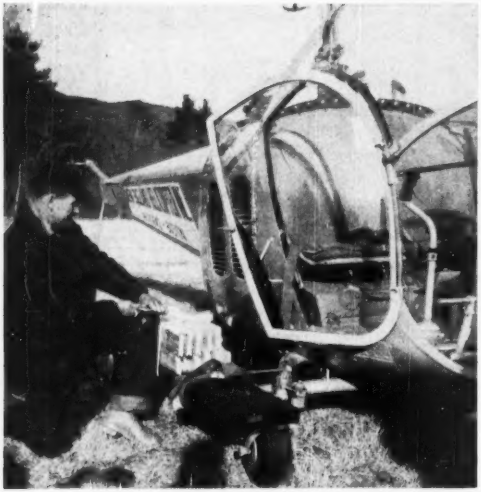




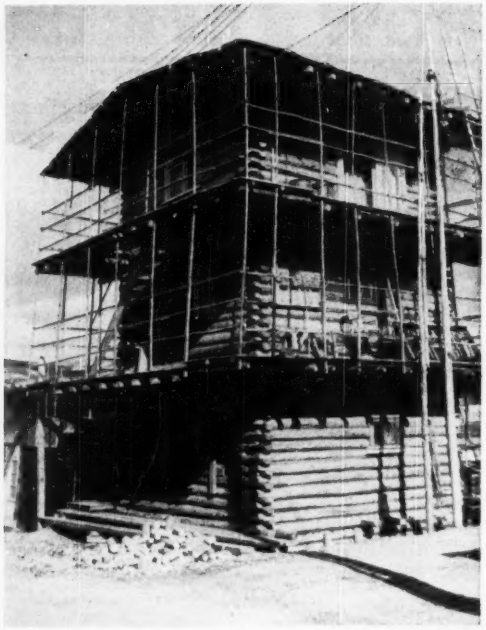
FOR 3,400-FT. IRRIGATION LINE near Santa Ana, Calif., 60-in pipe is cast in place in trench. Formed wire mesh is placed in invert, then given 3-in sprayed concrete coating (top). After 24 hr, steel arch forms are set, followed by mesh and mortar. Pipe is shot in 150-ft lengths. Economical pipemaking method was devised by C. R. Browning, Tustin (Calif.) engineer. (Acme Photos)

THERE'S PLENTY OF REACH in this P&H truck crane with 135-ft boom and 20-ft jib, but Taylor & Gaskin Inc., Detroit steel erectors, need it all in setting top steel on Plymouth (Mich.) tower—it's 148 ft tall. Another crane helped get 155-ft stick to 45 deg, where boom hoist lines took over completely. Rig swings 2-ton loads at 15-deg radius. R. Anderson is erection superintendent.

JOB ODDITIES



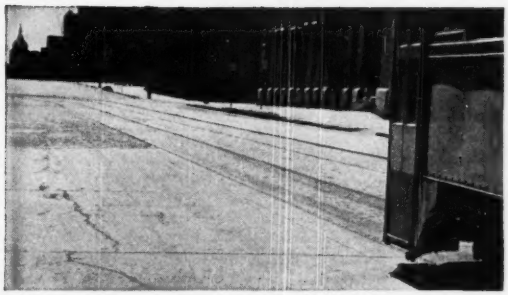
HELICOPTER takes on load of building material for transport to nearly inaccessible summit of 3,260-ft Mt. Pequawket, N.H., where fire lookout tower is under construction. Windmill rig ferried 15 tons of material—300 lb per trip—in less than two weeks, vs estimated five weeks for backpacking by 15 men.



BE IT EVER SO HUMBLE . . . Diversified living quarters at Whitehorse, Yukon Territory, include 3-story log cabin and Quonset hut that nestles in its shadow. Whitehorse is jump-off place for Keno Hill area where rush for lead and silver is on. Old Sourdoughs passing through must look askance at this setup.

THESE RIGS ARE WORTH THEIR SALT. Taking tip from contractors, Leslie Salt Co., Newark, Calif., puts pair of Caterpillar D6's on 85-ft.-high stockpile to push 400,000 tons of salt to portable conveyors. Well, back to the salt mines!

EVER WONDER WHY piles in clay go down easy; come up hard? Skin friction during driving is small, but clay later puts squeeze on. This Bethlehem H-section, pulled after 14 yr, came up with stiff clay slab still tightly bonded to inner faces of pile.



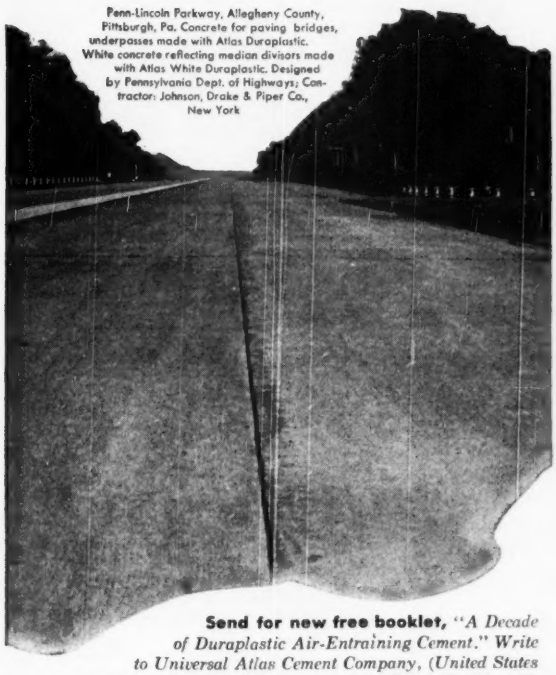
Ten Years Ago...

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown above as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today.... No doubt of *durability*... in concrete paving made with ATLAS DURAPLASTIC*



Penn-Lincoln Parkway, Allegheny County, Pittsburgh, Pa. Concrete for paving bridges, underpasses made with Atlas Duraplastic. White concrete reflecting median divisors made with Atlas White Duraplastic. Designed by Pennsylvania Dept. of Highways; Contractor: Johnson, Drake & Piper Co., New York

From its initial installation to the succeeding score upon score of successful paving installations over the past ten years, there is abundant evidence that Atlas Duraplastic cement fortifies concrete against freezing and thawing — renders it highly resistant to the scaling action of de-icing salts.

Clinching proof was revealed at the first session of the American Concrete Institute Convention held in New York in February, 1949. Devoted to "problems in concrete paving surface durability," the session recorded a significant unanimity of opinion that air-entrained concrete resists pavement scaling from salt treatment. A leading construction magazine commented, "... the use of entrained air, insofar as designers and contractors are concerned, would seem to admit of no more argument than the use of the water-cement ratio."

Experience shows Duraplastic (1) requires less mixing water for a given slump; (2) makes concrete more plastic, more cohesive, more uniform; (3) minimizes segregation and bleeding; (4) produces more workable concrete that dumps and screeds easily; (5) permits finishing closer to paver, and allows earlier protection for curing.

For pavement needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for new free booklet, *"A Decade of Duraplastic Air-Entraining Cement." Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

CM-D-93

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

The right tire for each job

BECAUSE each of these super-tough work tires has its own specially engineered tread design—each is the outstanding favorite in its class with construction men, everywhere. The Hard Rock Lug is champ for rock work—the SURE-GRIP is tops for drive-wheel traction on both earth movers and graders—the All-Weather is unmatched for flotation, rolling big loads economically. They're your best bet for longer life, greater wear, moving yardage faster, cheaper.

SURE-GRIP

We think you'll like
"THE GREATEST STORY EVER TOLD"
Every Sunday—ABC Network

GOODYEAR

All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Volume 32 • Number 2

CONSTRUCTION
METHODS AND EQUIPMENT

FEBRUARY, 1950

A Challenge to Leadership

COMMENTS EXPRESSED and reactions noted at the 31st annual convention of the Associated Equipment Distributors that jammed Chicago's hotels to overflowing last month were most interesting. This was the first AED meeting held in many a moon that marked the close of a year where business had declined from the previous year. Delegates cited sales losses averaging 15% from the billion-dollar 1948 volume—but still admitted sales topped the best pre-war years.

Explanations of why equipment sales lagged in the year chalking up the greatest construction volume in the country's history were many and varied. Some distributors merely complained—they are whipped by the buyers staying away from their door. Others pointed out that a surge of buying following war starvation temporarily satiated the market, that certain prospective buyers held off hoping for price drops, that war surplus was still a factor, and finally, that a buyers' market had returned before distributors were ready with sales forces and sales technique.

So much for 1949 and what happened in the past. All that is for the record. Let's look ahead. The construction outlook for 1950 promises to equal 1949—with several more high volume years in prospect. What is the corresponding outlook for construction equipment?

Just about what the equipment industry—manufacturers and distributors alike—want to make it, is our opinion of 1950 prospects. Business in 1950 will depend upon the degree of leadership equipment makers and their sales outlets assume in supplying construction forces with the tools necessary to assemble 19 billion dollars worth of materials and labor into physical plant.

That much construction will, of course, require a substantial amount of replacement equipment. Perhaps the machinery industry will be satisfied with that. If so, the wailing at the next AED meeting will be fourfold what it was last month at Chicago. Or, equipment manufacturers and dealers can convert a 19-billion-dollar construction volume this year into the biggest sales year they ever had—but not by sitting on their hands and lamenting.

In the first place, where's all that wonderful post-war new equipment we have been promised? The really new and important development since hostilities ceased can be counted on the fingers of one hand. To be sure, speeds have been increased somewhat, capacities have been enlarged, and engines have been souped up. But really, what is being offered contractors today that is much better than they already have on hand? What really new equipment is available that will make contractors want to scrap present machines in favor of something so new, so radical, so economical that they can't afford to operate their old stuff? In other words, what do manufacturers and dealers have to sell?

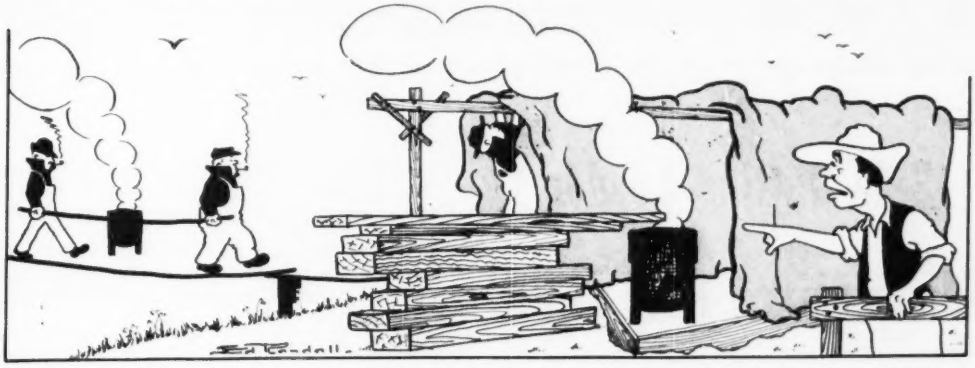
Development of new equipment costs money, you say? Sure, we know it. But if equipment sales are to rise much above the parts replacement level, new machines, better machines, and machines so efficint they render present units obsolete, are necessary. We aren't playing tiddly-winks. We're talking about a billion-dollar slice of the nation's second biggest industry.

Vigorous, intelligent selling and sales promotion, better sales training courses, more realistic credit and financing arrangements, increased services to the customer, and tougher trade-in policies are also all in the picture of a bigger equipment market.

But fundamentally, the place the equipment industry will occupy in construction will depend upon the leadership it assumes. If it takes the responsibility of producing better and more efficient machines to enable the construction forces to operate better and cheaper, the equipment world will prosper. If, however, it waits for construction to develop whatever it needs for better operation, or is content with a mere replacement business, its sales will lag far behind the corresponding construction volume.

Surely, here is a challenge to leadership.

Rich



SPIKE SEZ: Watch out for them salamanders, you guys! They're always startin' fires. Keep the lumber away. And make sure that framework's strong and the tarps tied tight. I don't want them dribbling in the fire to send my job up in smoke!

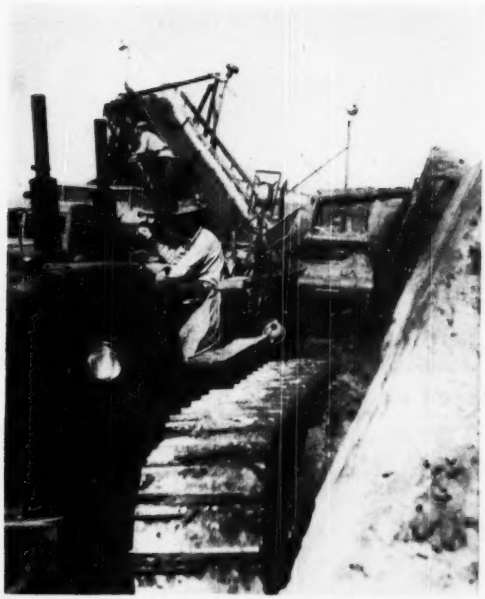
Loader circles borrow-pit rim; wing-blade shaves 12-ft. bank. It's how . . .

Side-Cutting Loader Slices Mixed Face at Pit

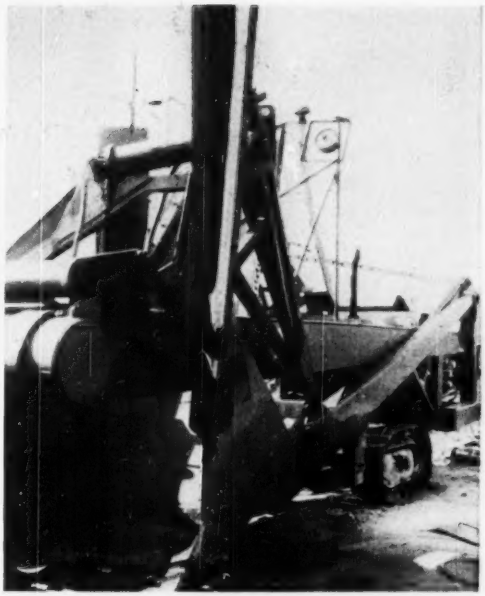
By HENRY T. PEREZ, *Managing Editor*

AT HARLAN COUNTY DAM, the Euclid loader goes round and round—it shaves embankment borrow from the walls of a circular pit. A long wing-blade, which works the vertical face, cuts through both an unsuitable top strata and excellent material beneath. Thus, the loader automatically mixes bad dirt and good to hold final clay content within allowable limits.

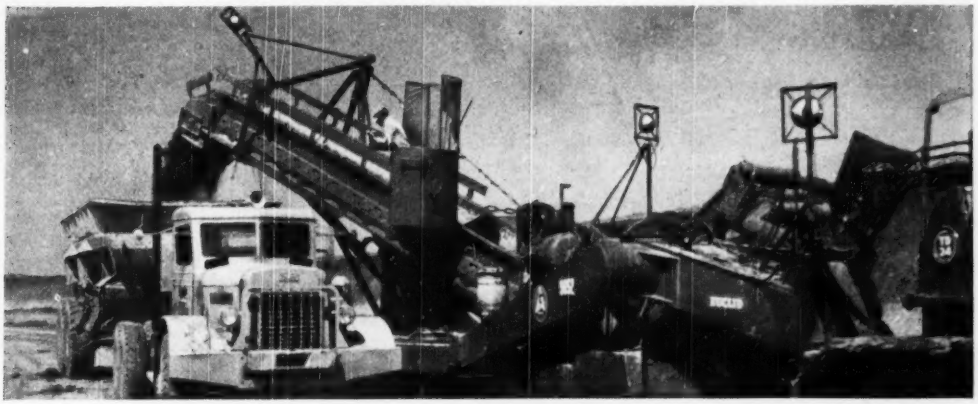
The 13,000,000-cu yd rolled fill dam on the Republican River near Alma, Neb., is being built by the Corps of Engineers. Main embankment is 12,000 ft long, 106 ft high, with a 750-ft maximum width.



CUTTING INTO BANK 4 to 6 in., loader digs 1,000 yd. per hr. Belt was raised and lengthened to load 30-yd. Southwest wagons. Note tractor headlight, relocated to give better illumination close ahead.



BLADE IS BRACED to loader frame; hinged near plow point; operated by hydraulic ram. Upper section has added moldboard that deflects dirt to fall ahead of belt.



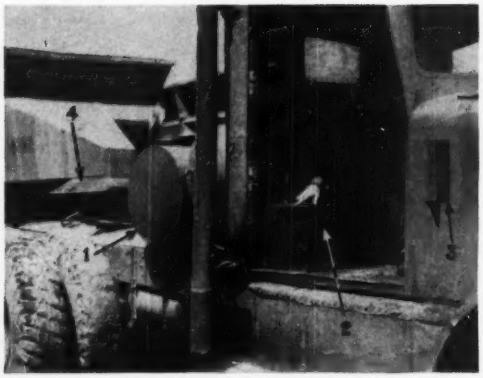
FOR NIGHT WORK, contractor added Kohler 5-kw generator and four spring-mounted floodlights (one lighting lower end of belt is hidden). For crew's comfort and safety he put on drinking-water barrel and spotter-checker's crow's nest. Latter has canvas windbreak; desk for notekeeping; electric bulb for cold-weather heating. Note strengthened and offset loader hitch.

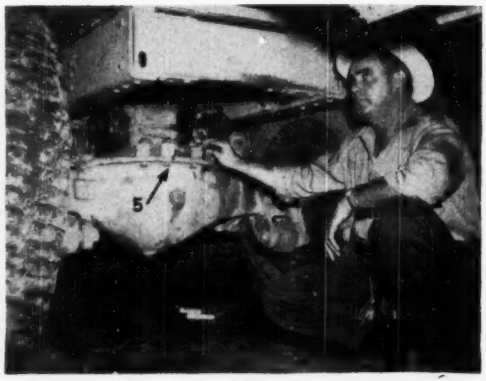
Harlan Construction Co. (a seven-firm joint venture) is completing the structure for $20,000,000.

Harlan's contract includes 10,200,000 yd. of borrow, mostly from shallow pits upstream from the dam axis. Embankment specs call for a 25% maximum clay content. But the top 5 ft of material in the pits runs as high as 40% clay. Fortunately, the stuff below is low-clay loess. So here's the money-saving way the contractor works the pits to combine the two materials into a suitable fill:

After topsoil is stripped, a dragline digs a narrow gut in the center of a borrow area. The gut is 12 ft deep, and wide enough for operation of a Euclid loader. Shaving only the sides of the gut, the loader enlarges it into a circular pit, then keeps expanding the circle to the limits of the area. The rig digs very little material from the floor of the pit. Sometimes two side-cutter loaders work simultaneously in the same pit—a sweet earthmoving operation.

The vertical wing that cuts the 12-ft face of the pit, developed by the contractor, is fashioned after a patrol grader's blade. It is hinged to the left front corner of the loader, is heavily braced back to the machine's frame, and is adjusted to the correct ver-





For greater efficiency contractor altered hauling units by:

1. Replacing two small side-mounted fuel tanks with single 95-gal tank (for faster filling and better feed because higher up)

2. Shifting battery from running board box to cab floor (for easier checking and reduced breakage)

3. Cutting side vents in cab (for operator comfort)

4. Putting skirt over ball-socket hitch (to deflect spilled dirt)

5. Welding support bracket to hold drop-in unit to differential banjo housing with four ¾-in bolts front and rear (to eliminate stripping of studs and losing grease)

6. Bracing rear transverse spreader with ¾x4-in straps (to hold wheels to correct camber by preventing deflection)

7. Sealing rear frame to act as 5-gal oil reservoir (to increase capacity of system for automatically oiling walking-beam bushings).

EMBANKMENT IS SPRINKLED by McCoy 4,500-gal tank wagon drawn by Caterpillar DW-10 tractor. There are three such units on project.

AS THIS PARADE PASSES, it leaves strip of embankment ready for next 6-in lift. Four International TD-24's pull dual sets of Gebhard sheepsfoot rollers to give 8-pass compaction in single sweep.

tical angle by an hydraulic ram.

Cutting from the side, the loader pulls hard—it takes two International TD-24 tractors in tandem. To prevent jerky operation, the contractor rigged up a box-section spreader bar between special hitches on the tractors. He also strengthened the loader hitch, and offset the connection to prevent unnecessary wear on crawler track rails and rollers.

As the loader circles the borrow pit, its blade shaves a 4- to 6-in layer from the full height of the wall (5 ft of clayey soil, 7 ft of loess). Material falls in front of the regular plow to be picked up by the belt and loaded into wagons.

A 15-unit fleet of 30-yd Southwest bottom-dumps, drawn by Peterbilt truck - tractors with 200-hp Cummins diesel engines, hauls the borrow to the dam embankment. Egress from the pit is through a ramped cut. Average haul is 1½ mi; maximum is 2. So the units can operate soon after rains, haul roads, (50 to 60 ft wide) are well-crowned and beautifully

maintained. And the borrow pit floor is kept sloped toward the center to drain water away from the operating rim.

The side-cutting loader works efficiently. And with a circular pit there's no time lost in turning the rig. It heaps a 30-yd wagon in short order and loads out 1,000 yd per hr.

When in place in the embankment, borrow material is practically homogeneous. It actually gets six thorough mixings as it is: **(1)** tumbled from the face of the pit; **(2)** scooped up by the loader belt; **(3)** cascaded to the wagons; **(4)** dumped in windrows on the fill; **(5)** spread by bulldozers for a 6-in lift; and **(6)** compacted to 95-100% of maximum density by eight passes of a 550-psi sheepsfoot roller.

Dry Pits Are Ponded

One borrow area, high on the right abutment, is worked by a spread of Tournapulls and tractor-drawn scrapers on a short haul. The material is a good loess. But it's much too dry for direct placement in the fill, so the area is ponded to raise the moisture content from 5% to about 17%.

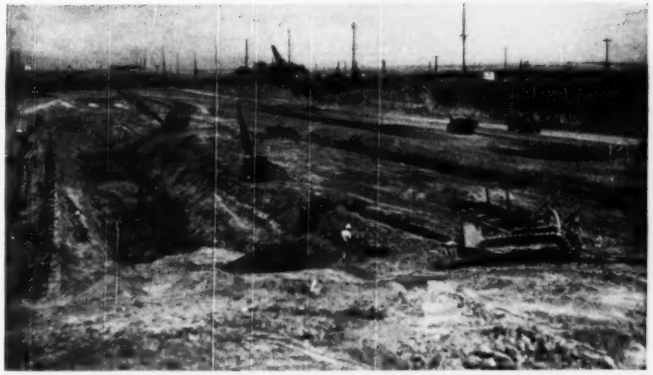
First a grader builds windrows. These follow the contour lines and are spaced a bulldozer-blade-width apart. A dozer simply travels between windrows to kick up cross-wall dikes.

The ponds hold 1 to 1½ ft of water and use about 3 in. per day. A section is kept soaked for a week, then excavated 8 to 10 ft and the area re-ponded if necessary.

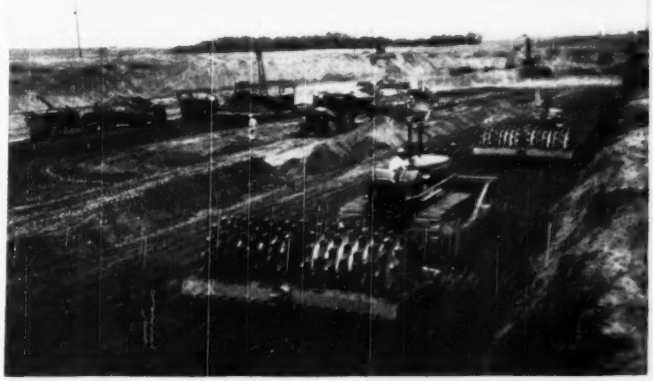
Base Loess Is Reworked

Chalk bedrock on the left (north) side of the Republican lies beneath a layer of sand and gravel covered by as much as 30 ft of loess. For use in the embankment, it is necessary to re-work the loess to increase its density from 75 lb per cu ft (in the natural state) to about 100 lb. Accordingly, a foundation trench of more than 2,000,000 yd. is excavated to sand across the full dam width. And a cutoff trench with 25-ft bottom width is carried down through the sand to bedrock.

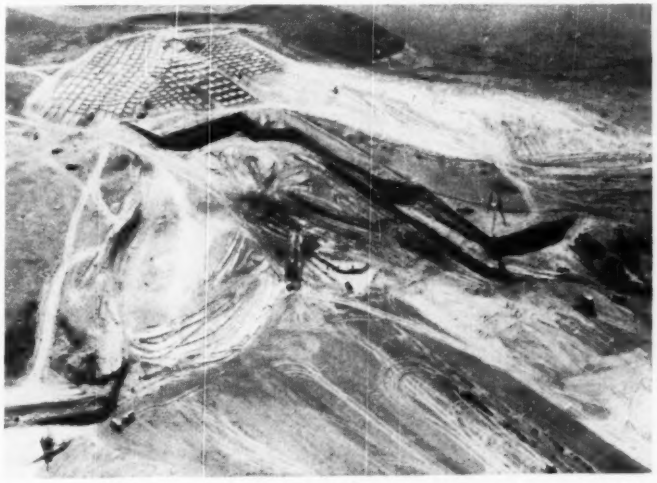
A Bucyrus-Erie 120-B electric dragline with 7½-yd Esco bucket digs the foundation trench, loading into eleven 15-yd Euclid bottom-dumps. The units hauled to the south half of the embankment



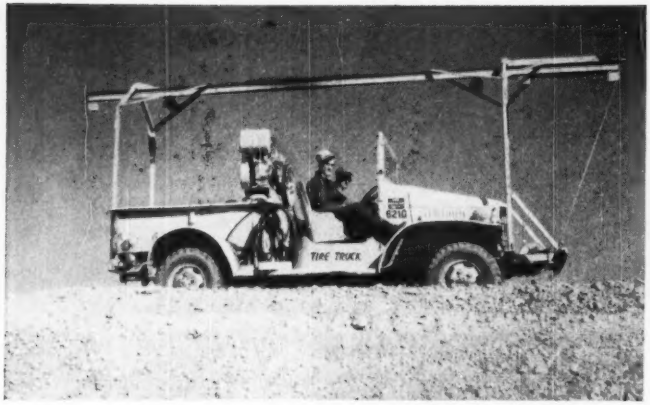
FOUNDATION TRENCH is excavated to sand across full dam width. Core trench (left) extends through sand to chalk bedrock. Wellpoints keep it dry.



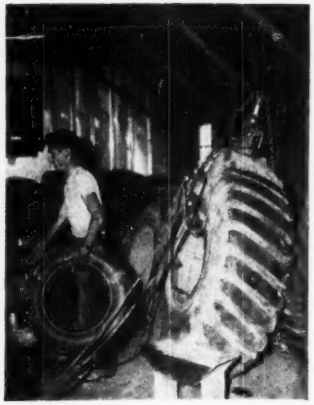
CUT IS BACKFILLED with compacted material excavated by dragline at head of trench. Lining both sides of 12,000-ft dam, 90-ft floodlight poles carry ten 1,000-w lights. They stand on 300-ft centers. Each pole has 2,400/120/440-v transformer (10 or 15 kva) to reduce power losses and to give convenient outlets to feed 2,400 v to dragline.



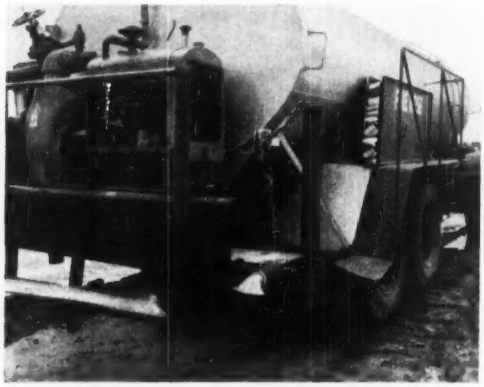
NOT RICE PADDIES, but ponding to raise moisture content of too-dry borrow pit. While new area (top) absorbs water, previously-soaked section (middle) is excavated by scrapers hauling to embankment (bottom right).



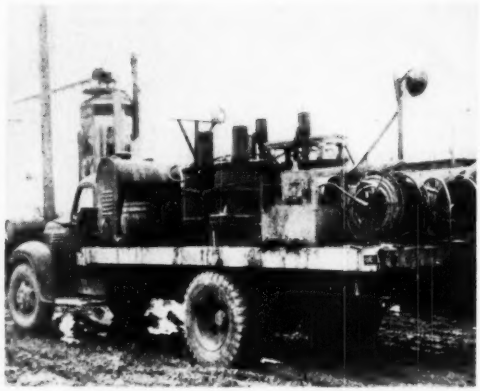
TIRE TRUCK gives quick service to more than 60 heavy earth-moving units rolling on more than 500 big tires. Dodge pick-up carries compressor, floodlights, power takeoff winch, and monorail that cantilevers front and rear to spot heavy tires during removal or replacement. Rig is mighty handy, particularly where job is spread out.



JOB TIRE SHOP is equipped with spreaders, buffers, scarvers, jacks and tire molds. It makes all repairs except retreading; handles sections as large as 6-in cavities. Here (left)



WATER TRUCKS that sprinkle haul roads all have pumped sprays, and all carry hoses to double as fire fighters at contractor's camp and yard. Shown are 4,500-gal Dart truck with vertical and horizontal sprays, and 2,000-gal International K8. Another International is also equipped as fire truck.



FIELD SERVICE ON RIGS is handled by repair unit (top) and greasing outfit (bottom) on International KB-7 trucks. Oiler carries five Alemite lube pumps and hose reels, Schramm air compressor, Kohler light plant, floodlights, and gasoline to fuel starting motors of diesel earth-moving rigs.

hydraulic jack applies pressure while section cures. Job built unit with twin air rams (above) dunks tube in water bath to locate hard-to-find leaks.

RUNNING DAM JOB for Kansas City District, Corps of Engineers, are Capt. Gordon A. Schraeder, resident, and B. V. Reany, project engineer.

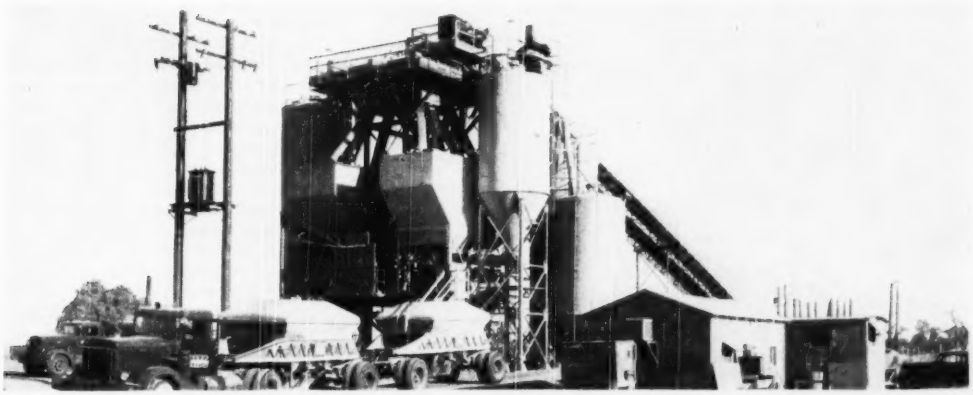
until 800-ft of trench was opened up. After that, there was room enough to apply a round-robin technique: excavating loess from the head end of the trench and hauling it right back to the floor of the cut for spreading and roller compaction.

The core trench, scraper excavated, is carried along with the foundation trench. A single ring of Moretrench wellpoints on 4-ft centers keeps the lower cut dry. The points are jetted through the sand and driven 18 in into the underlying chalk. This spudding develops a pocket so the point sits in a hole with screen below top of rock. Thus, the full depth of screen is effective—and no casing is needed. Sand from the cutoff trench is spread as a drainage blanket beneath the downstream section of the embankment.

Project Personnel

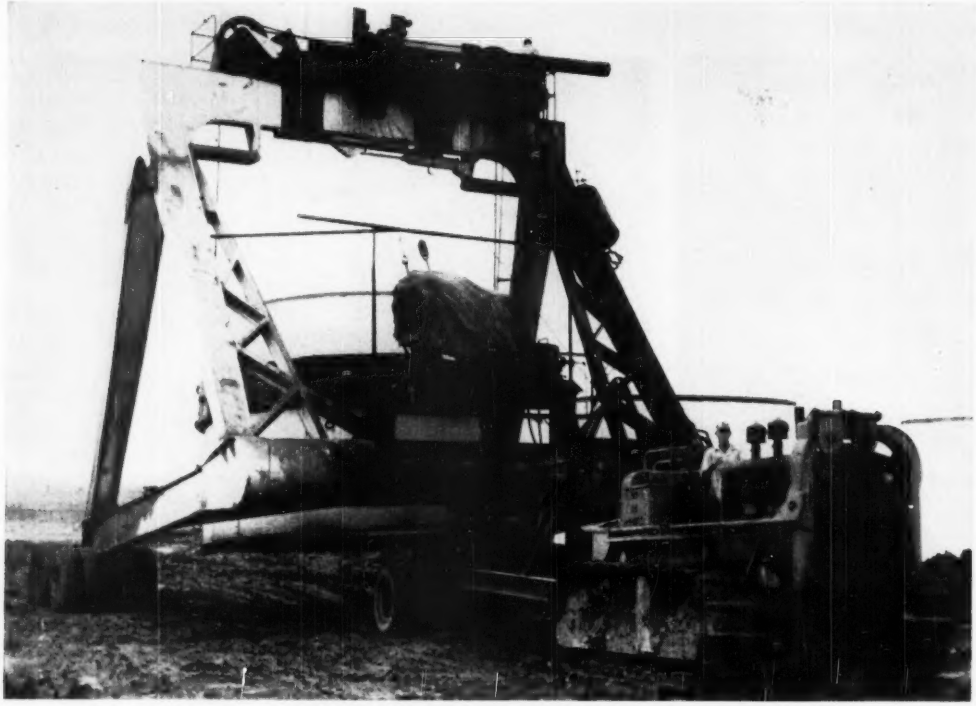
Guy F. Atkinson Co., Bressi & Bevanda Constructors Inc., David G. Gordon, Chas. L. Harney Inc., W. E. Kier Construction Co., A. Teichert & Son Inc., and Trepte Construction Co. — combined as Harlan Construction Co., Alma, Neb.—are contractors for the work. Bob Atkinson is project manager, John Kier is associate project manager and Hugh Parker is chief engineer. For the Kansas City District, Corps of Engineers, Col. Paul D. Berrigan is district engineer, Capt. G. A. Schraeder is resident, and B. V. Reany is project engineer.

Dual Plant Turns Out Batches Fast



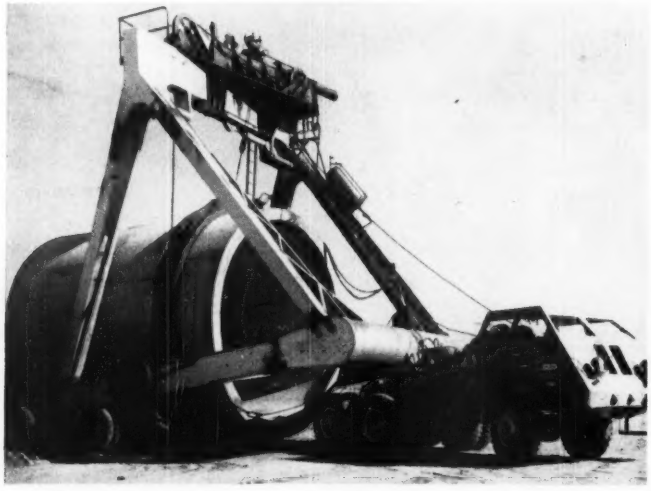
TWIN BATCHING SETUP supplies concrete batches for Friant-Kern canal, major feature of U. S. Bureau of Reclamation's Central Valley project. Located near Porterville, Calif., two Noble batching plants dry-dump into transit mixers on Peter Kiewit Sons Co.'s job at average of 1,074 batches (1,428 cu yd concrete) per 8-hr day, using 2,000 bbl of cement daily and 265 tons of aggregate hourly.

Integral parts of the plant are five silos holding 2,750 bbl of cement, and a top set of screens that size aggregate as it goes to the bins. Dismantled on sites of two other jobs, plants were shipped to Porterville and erected as a unit for the canal project. Both have 150-ton, 4-compartment aggregate bins. Trailer and semi in foreground haul bulk cement to twin plants.—*Photo by Harold Fate*



Tractor-drawn gantry carries 65-ton pipe section to...

Two Mammoth Machines Handle



FIRST MOTIVE POWER for pipe carrier was truck-tractor converted from Army tank retriever, but unit could not develop required traction in wet weather. Here rig is tested as machine for placing pipe.—USBR Photo

NEATLY HANDLED by two big machines, as many as 25 lengths of 15-ft dia precast concrete pipe —each weighing 65 tons—were laid daily at the Tracy pumping plant on the U.S. Bureau of Reclamation's Central Valley (Calif.) project. The heavy tubes were trundled from pipe yard to pipe line in a huge gantry trailer, then lowered to place by a 100-ton crane. Precasting of the pipe, said to be the world's largest (12 ft long, 15-ft dia, 15-in. wall, weighing 65 tons), and the pipe line itself, were described in CONSTRUCTION METHODS AND EQUIPMENT, January 1950, page 54.

The rig that transported the pipe was a steel gantry frame, U-shaped in plan, that picked up and suspended a pipe length by cables from a top bridge across the U. Multi-wheel trucks with pneumatic tires at the ends and center of the U gave the gantry three-point bearing for firm support over

...100-ton crawler crane that positions it in trench as...

Biggest Precast Concrete Pipe

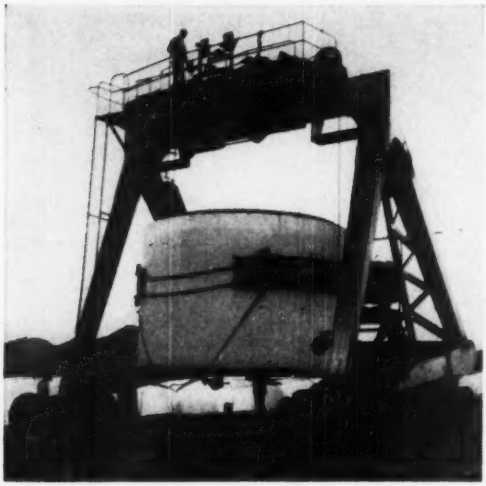
rough ground. It was pulled by an Allis-Chalmers HD 19 tractor.

Pipe was cast and stored vertically. To move a length to the placing crane, the gantry trailer was backed around it until the pipe was centered beneath its overhead bridge. A steel and cable band assembly was lowered over the end of the pipe to just above mid-point; then the band was tightened by integral hydraulic jacks to clamp the tube securely. Wire cables from each side of the band passed over sheaves and were dead-ended on a hydraulic ram on the gantry bridge. Extending the ram lifted the pipe clear of the ground for travel.

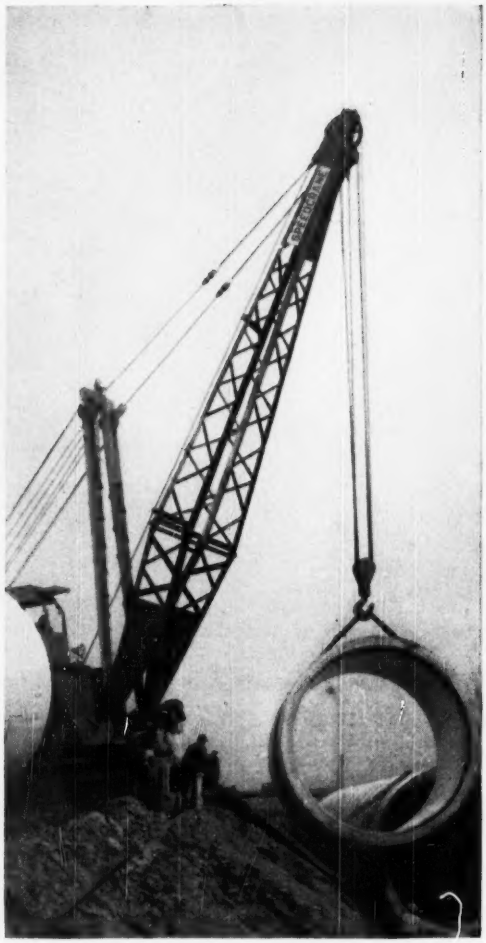
Oil pressure for jacks and ram was furnished at 3,000 psi by gear pumps powered by a 125-hp Waukesha engine on the gantry yoke. All controls were centered on the overhead bridge.

Alongside the pipe ditch, the tube was flipped on its side. For

SECOND VERSION has oil pumps and engine mounted on front of gantry. Pipe-handling rig was developed by Kenneth Jones, chief engineer for United Concrete Pipe Corp., who first built and tested scale models.—USBR Photo



OVER SHE GOES! (three photos above) With gantry positioned alongside ditch, pipe is turned to horizontal position by winch on A-C HD19 tractor that pulls carrier. Cables are visible beneath pipe in top photo. Controls for raising and lowering pipe are on gantry bridge, where operator has clear view.



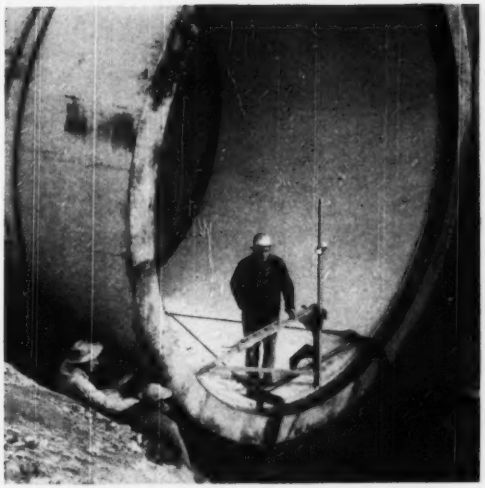
PIPE IS LOWERED to trench bottom by Manitowoc Speedcrane. With 100-ton capacity at 12-ft radius, rig usually handles 65-ton pipe with crawlers parallel to ditch for quicker travel. But when reach is long and ground soft, it works end-o and on timber mats. High cab gives extra visibility.

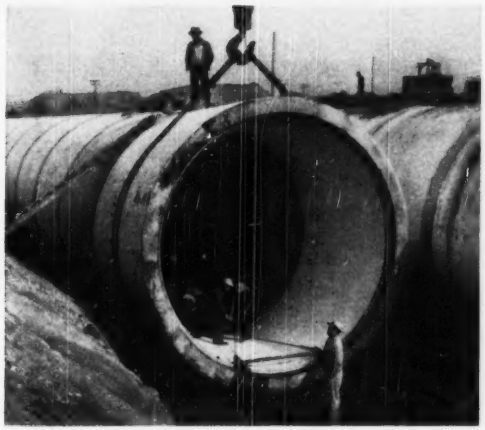
this, cables from the pulling tractor's power take-off winch were hooked to the rear of the pipe band and tightened to turn the pipe; then it was lowered to blocking to await placement by crane.

A 100-ton Manitowoc Speedcrane on the lip of the trench laid the pipe, handling it with a split sling whose two halves were joined by a coupling plate for easy attachment and removal.

Lowered by the crane, the pipe was pulled tight against the previously laid length by ratchet lever jack. A hydraulic jack reacting against the trench side pushed the pipe into exact alignment. There it was blocked in place with wedges and firmly bedded in a 2¾-ft layer of lean concrete poured beneath the invert.

Before backfilling the trench, a strip of heavy paper was glued around the outside of each pipe joint. These strips, plus a preliminary calking of lead wool



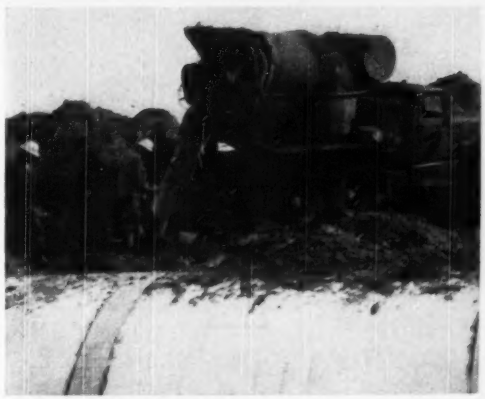


SPLIT SLING holds heavy pipe. Cable loops hook over lipped, semi-circular protrusions on coupling plate (top) for quick connection. Pipe is pulled home against next length by come-along (bottom) anchored back in line. Note chain on crane hook to keep slings from slipping off when slacked.

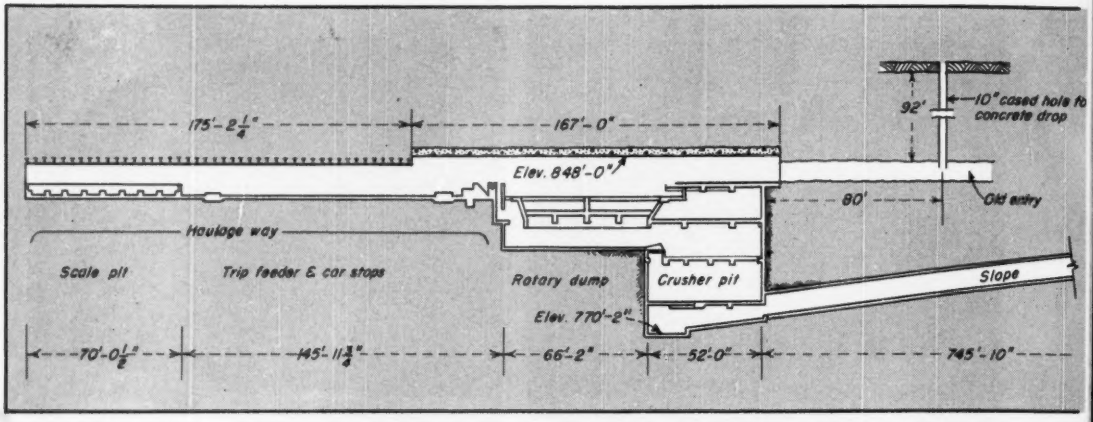
on the inside, retained a thin grout that was poured, after backfilling, to make the joints watertight. A final lead calking and interior guniting completed the joints.

Three pipelines were laid alongside each other. To keep the crane's operating radius to a minimum, only one ditch was dug at a time. With a complete line laid, the next trench was opened up.

United Concrete Pipe Corp., Baldwin Park, was sponsoring contractor for the pipeline work, heading up a joint venture of four California contractors known as SUBH (Stolte, Inc., Oakland; United Concrete Pipe Corp.; Duncanson-Harrelson Co., Richmond; and Ralph A. Bell, Monrovia). George Waters was project manager for the combination. For the Bureau of Reclamation, Oscar G. Boden is construction engineer on the Tracy project and J. R. Granger is resident.



FINAL PIPE ADJUSTMENT by hydraulic jack (top) is checked by level rod and carpenter's level assembly. Then, after pipe is blocked and sling removed, glue is spread around pipe joint to hold grout-retaining paper seal (middle). With pipe backfilled, joint is grouted (bottom).



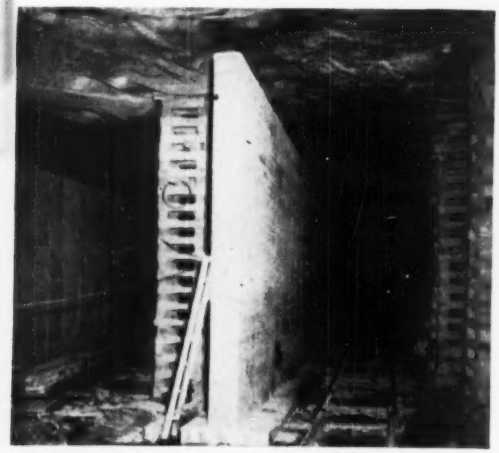
Construction Goes Underground at

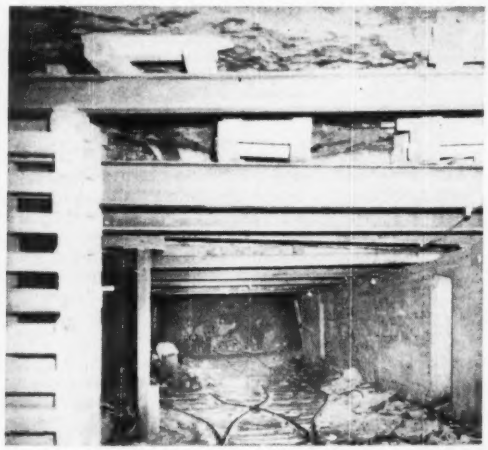
STARTING WITH PASSAGEWAYS already driven 12 ft wide and 6 ft high through coal seams, Dravo Corp. recently completed a huge underground chamber of reinforced concrete to house the rail entrance, crusher and belt conveyor of the world's largest coal processing plant for Jones & Laughlin Steel Corp. at Vestaburg, Pa.

They first cribbed up the sandstone and shale roof in the scale pit and trip feeder rooms, then poured the reinforced concrete center and sidewalls for the full length of 175 ft. The roof was cribbed 15 in. to 50-lb I-beams on 3-ft centers, and 3-in. timber lagging laid on the bottom flanges. A solid roof was needed in the next section, however, which comprised the rotary dump and crusher rooms. Here steel arch ribs were set on the sidewalls on 4-ft centers for the double-radius concrete-arch roof which covers the entire crusher section. To speed up this job and insure proper alignment, an elaborate steel braced arch form was built and traveler-mounted.

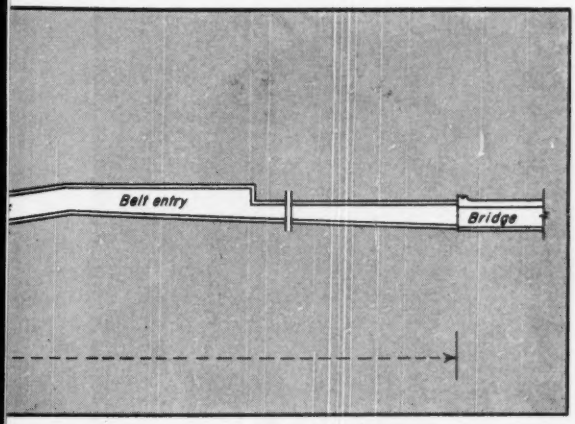
As this arch form was moved into place in the crusher area, floor slabs and dump openings were formed and poured in the rotary dump and bin sections. With the concrete walls and arch roof in place in the crusher section, crane runway brackets, rails and beams were installed on the sidewalls and a shop crane mounted on the rails. This rig began digging out the crusher pit and dropped the spoil into a 10x10-ft glory hole to be carted out in muck cars up the 12% slope in typical mining fashion.

Virtually all forms for the rotary dump and crusher room were fabricated outside, built in lifts, maximum

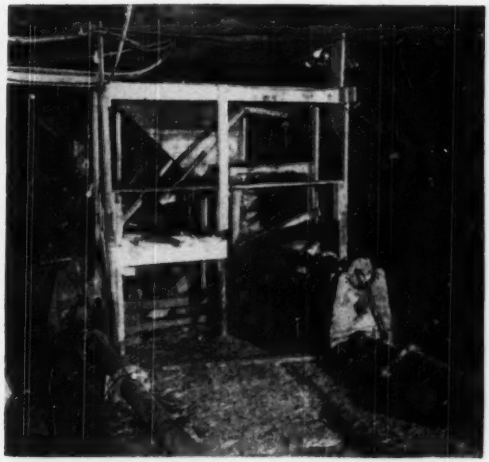


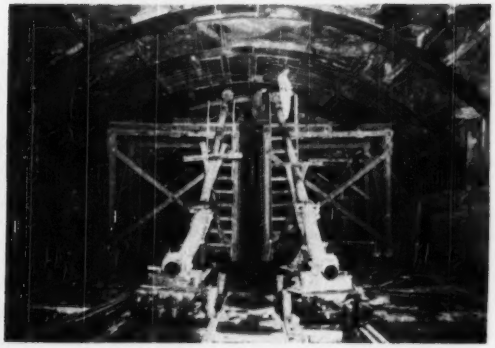


FIRST STEP IN UNDERGROUND CHAMBER was to crib up sandstone roof (left), then form and pour footings and walls in scale pit. Haulageway is 13 ft 3 in. high and 33 ft 6 in. wide over-all. Throughout this 175-ft section, 50-lb I-beams were set on 3-ft centers atop concrete walls and 3-in. timber lagging spread on bottom flanges. Similar procedure on slope entry (right) to house coal conveyor belt. Here, however, forms for concrete roof slab were later suspended from cross-beams shown.

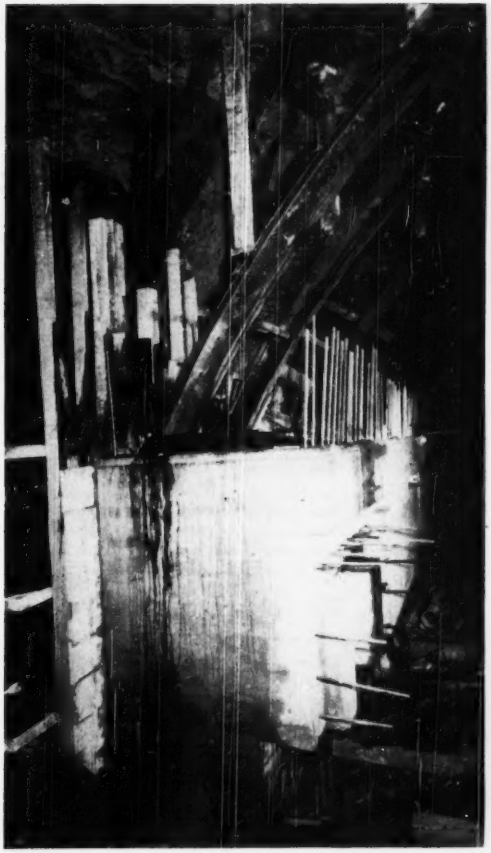


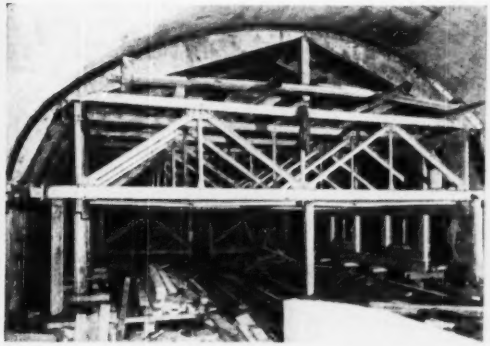
Coal Processing Plant





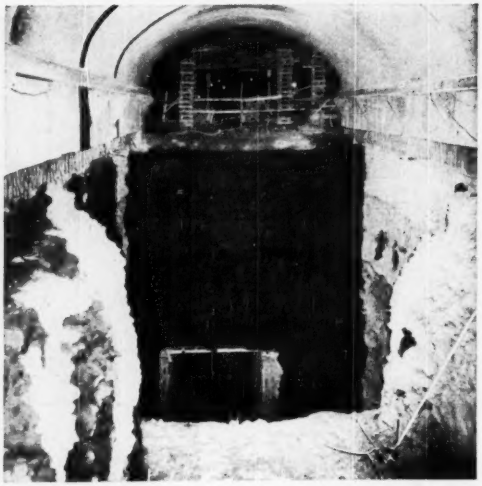
CONCRETE FOR UNDERGROUND chamber was poured into 10-in. cased hole dropped from ground level and bottom in entry about 80 ft from work. From small storage bin it was placed pneumatically in sidewalls and arch in separate operations with one ½-yd Ransome placer serving each side. Rex Pumpcrete, double barrel, tunnel-type machine, was used in concreting of slope and entry with maximum of 800 ft on discharge line. Total concrete, 7,125 yd. Total excavation, 19,500 yd. Dravo Corp. handled job with Jones & Laughlin force for necessary mining work.

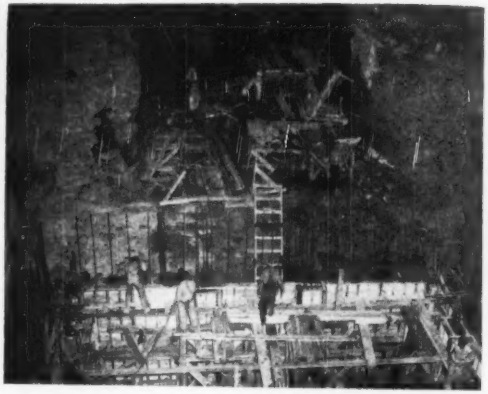




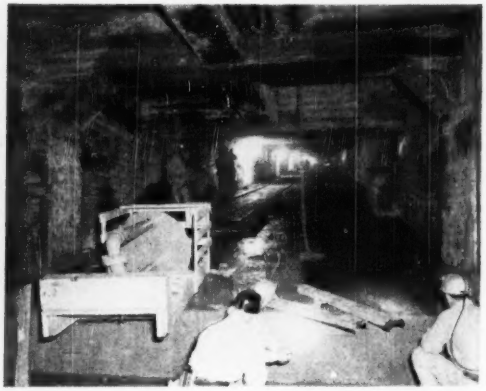
SIDEWALLS in rotary dump and bin opening were run up 7.15 ft (left) and steel arch ribs set on 4-ft centers for double-radius concrete arch roof. Arch rise is 10.6 ft from crown to spring line. Elaborate braced arch-roof form (right) was collapsible and traveled entire 167 ft. Crushing plant is located about 110 ft below ground at Vestaburg, Pa., 40 mi south of Pittsburgh. Crushed coal is carried on conveyor belt on 567-ft slope at 12% grade, goes across bridge for further processing. After successive moves of arch . . .

. . . ROTARY DUMP FOUNDATIONS were poured and anchor bolts placed on walls and deck (left). At same time, with 7-ft sidewalls and concrete arch preventing rock-falls or cave-ins, crane runway brackets, beams and rails were installed in sidewalls and crusher pit excavated to 70.5 ft below arch top. Muck was dropped down 10x10-ft glory hole (right) and loaded out in mine cars on slope. Walls were then built up in 10-ft lifts. Entire chamber and slope were enlarged from original 12x6-ft passageways in coal seam.





SLAB AND WALL FORMS in crusher pit were fabricated outside mine (left) in lifts up to 10 ft. Vertical bulkhead joints were used only where design required. Concrete was blown 80 ft from down-hole to storage hopper at edge of pit, there transferred to 1-yd bucket and placed by crane riding rails in sidewalls overhead. Slope concreting (right) was handled in three steps: sidewalls to completion, roof slab and invert. Roof forms were hung from cross-beams placed atop sidewalls for roof protection.



10 ft. Since drift access was 1,500 ft long, a 10-in. cased hole was put down 92 ft from ground level for a concrete drop. Bottomed in an entry 80 ft from the crusher, the pipe passed the mix into a small storage bin. It was placed pneumatically in walls and arch in two separate operations with ½-yd Ransome Placers, one serving each side. Each placer handled 30 yd per hr with air supplied from on top. Concrete for the crusher room walls was blown 80 ft from the down-hole into a storage hopper at the edge of the pit and transferred to a 1-yd bucket supported by the shop crane overhead.

Concreting of the 567-ft slope was done in three steps: (1) sidewalls to completion, (2) roof slab, (3) invert. Placement was by a Rex Pumpcrete, double barrel, tunnel type machine with maximum discharge length of 800 ft. At one time initial set seemed to overtake the concrete before emergence from the 8-in. discharge line, but this was corrected by wetting, cooling the stockpile aggregates, and adding 1 lb of Plastiment per sack of cement.

Sidewalls were completed in mild weather 1:2:3 mix, 4- to 6-in. slump, 1½-in. gravel, Duraplastic cement, without incident. The slope roof slab was placed during very hot weather, and proved to be the only confined and awkward area. Total concrete used was 7,125 yd, requiring 19,500 yd of excavation. Jones and Laughlin Steel Corp. forces collaborated by handling the mining work for Dravo.

For information and pictures we are indebted to A. J. Morrison, manager, Shaft and Tunnel Department, Dravo Corp., Pittsburgh.

ANOTHER EQUIPMENT MAINTENANCE FEATURE

Good Maintenance Keeps Earthmoving Fleet Rolling at Night

All pictures by JAMES JOSEPH, Los Angeles

WHILE LOS ANGELEANS SLEEP, twelve 20-yd trucks roar over a 3½-mi round-trip route in disposing of 900,000 cu yd of spoil from Ft. Moore Hill in downtown Los Angeles to make way for the new freeway system. To inconvenience the city's heavy traffic as little as possible, excavation and hauling operations are confined to this 11½-hr night shift, from 7 pm to 6 am. Dubbed "Operations Night-time", the truck fleet is rolling up an average of 1,326 mi in hauling 6,074 cu yd each shift. And just to make sure the contractor will fix up any damage to streets, the city demanded $100,000 bond before haul permission was granted.

Spoil from Ft. Moore Hill is being temporarily stored for future use in the freeway. Grades on the dump run as high as 12%, rugged going for the big trucks. Guy F. Atkinson Co., general contractor on the project, is handling the job with one Bucyrus-Erie 120-B electric-drive 6-yd shovel and twelve 20-yd Peterbilt trucks loaded to 18 yd to keep within weight limitations of the bonded haul route. Normally eleven trucks are working while one is held in reserve. Systematic maintenance of the trucks keeps them in top shape, for shut-downs would be costly on this job.

At the end of each night shift, the truck drivers make out a complete diary—known as the scandal sheet—of truck troubles, which is turned over to the day-time repair crews. A complete maintenance book showing repairs and parts replacements, is kept for each of the big trucks.

As the project approaches completion, shopmen report no motor troubles. "We've never lost a bearing, nor had a pan or head off, except on the four complete overhaul jobs we've had to do since beginning work here early last spring," says its master mechanic, A. J. Carpenter.

Maintenance schedules are strictly adhered to: (1) motor oil is changed every 77 hr (roughly every 7 days); (2) airfilters are cleaned twice weekly; (3) motors are tuned up whenever the scandal sheet reports the need; (4) motor overhaul is done only if the rig is losing power or uses in excess of 3½ gal of oil per shift. Only four engine overhauls since work began is chalked up to good preventive maintenance.

The contractor set up his own

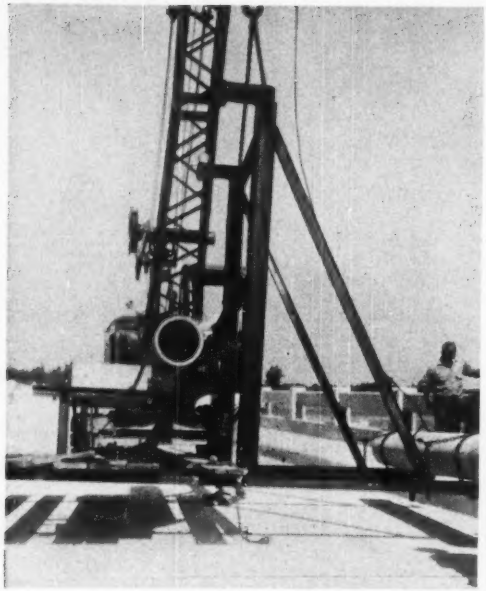
(Continued on page 86)

SPECIALLY EQUIPPED for night-time emergency repair work, this job-fitted maintenance truck includes a generator, floodlights, General Electric welder, gas welding equipment, electric power and compressor tools. It patrols 3½-mi haul route on Los Angeles Ft. Moore Hill project.

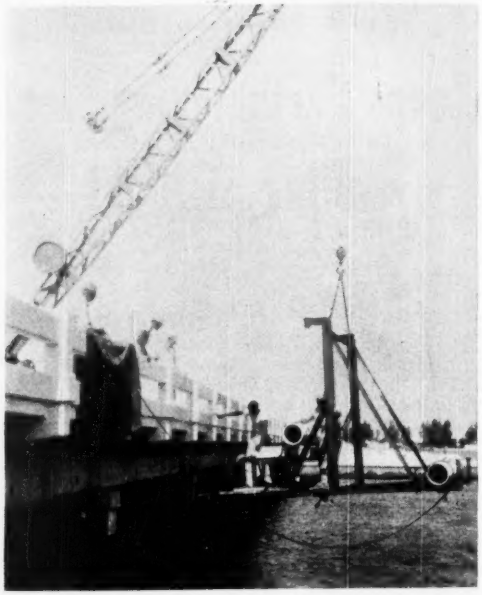
TEMPORARY JOB SHOP handles light repairs and servicing of 20-yd trucks on Los Angeles night-time excavation project. Note how sides of Peterbilt truck bodies have been raised by pipes strap-welded to top rail.

REGULAR INSPECTION of 20-yd Peterbilt trucks used solely on night shift is made over maintenance pits during daylight hours.

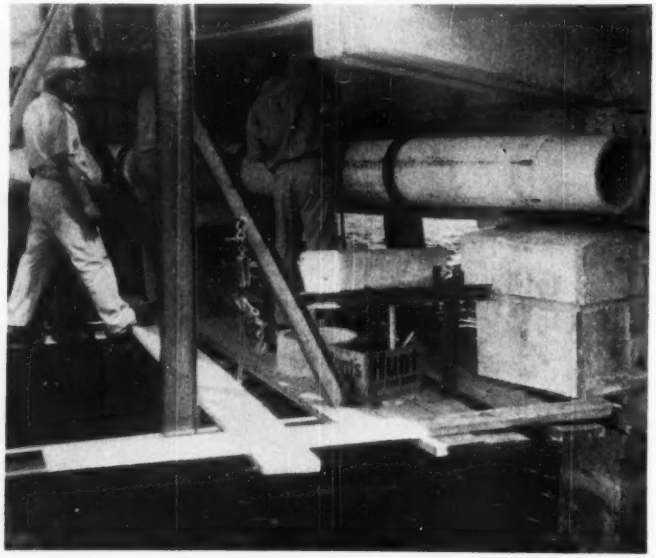
Crane and Platform Tuck Pipe Under Bridge



READY TO GO OVER SIDE, next length of Johns-Manville Transite pressure pipe, with hanging bands attached loosely, is chained in place on platform. Platform is slightly shorter than full pipe-length, and counterweighted with piece at right. The workmen step aboard, signal engineer to "up," and are . . .



LIFTED OVER RAIL and brought back in under 4-ft sidewalk. Platform is brought in and lowered slowly until projecting hooks are just above railing, automatically spotting pipe just right for transfer to hanger bolts. Tag line and whip line from crane give added platform control.



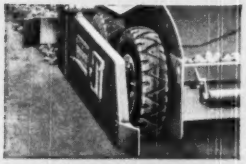
AFTER NEW SECTION OF PIPE is coupled in place, hanger bolts are pushed through from rear in holes left during bridge construction, and whole affair anchored firmly in place. Then, up with platform to bridge deck—move to next spot—and keep going without a hitch.

HERE'S THE BRAINCHILD of a welder, a contractor's man and a pipe manufacturer's representative. They dreamed it up to sling a 12-in water line of Johns-Manville Transite pressure pipe under a bridge at Riviera Beach, Fla. Tides and current prevented working from a barge, and a scaffolding setup hanging from the bridge rail would prove too cumbersome. So they rigged up a pipe-placing platform almost as long as a section of pipe; lashed a length on the outer end as a counterweight; slung the whole thing from a crane.

For setting each section, the platform floor was pulled up snug under the bridge piers, thus putting the pipe in the right spot for clamping to hanger bolts. The platform extended under the span to allow the men to go behind and insert hanger bolts. At that time, vertical channels of platform frame were alongside the bridge rail, and projected over it as a safety factor in case the cable was released by accident. That's all there is to it. Simple, isn't it?

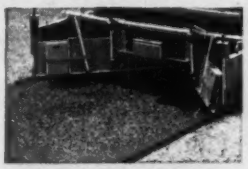
JAEGER paver-type AGGREGATE SPREADER

the low-cost, accurate, self-propelled spreader you've been looking for



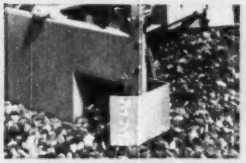
ALL TRACTION ON SUBGRADE or compacted course. No displacing of loose material. 4-wheel drive.

STRAIGHTEDGE RUNNERS carry screed independent of rest of machine, average out subgrade irregularity, insure accurate lay.

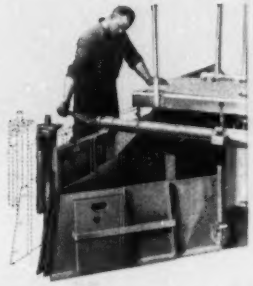


LAYS MANY MATERIALS: The Jaeger is adaptable for free-flowing bituminous mixes as well as all aggregates up to 4" stone.

UP TO 25' IN TANDEM: Use 2 low-cost spreaders to lay and roll full-width base. Keep your costlier paver busy on top course.



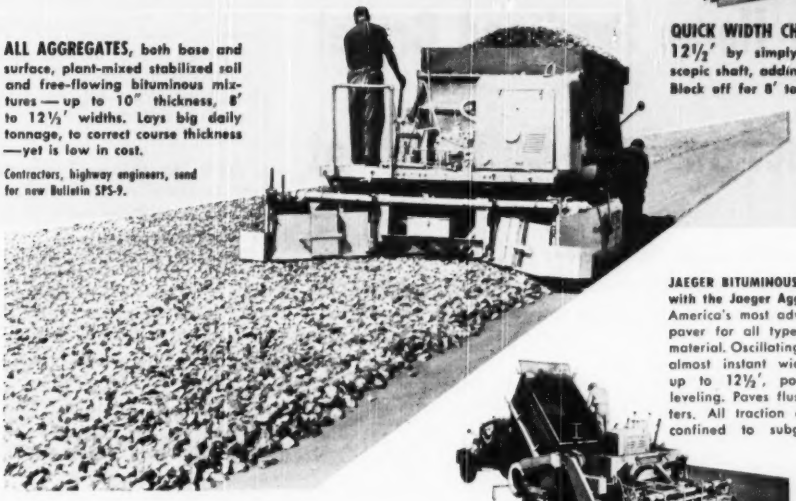
BLENDS PERFECT JOINTS: Side control gates furnish material for blender wings to form joint. Saves hand work.



QUICK WIDTH CHANGES, 10' to 12½' by simply cranking telescopic shaft, adding screed inserts. Block off for 8' to 10' widths.

ALL AGGREGATES, both base and surface, plant-mixed stabilized soil and free-flowing bituminous mixtures — up to 10" thickness, 8' to 12½' widths. Lays big daily tonnage, to correct course thickness — yet is low in cost.

Contractors, highway engineers, send for new Bulletin SPS-9.



JAEGER BITUMINOUS PAVER "Teams" with the Jaeger Aggregate Spreader: America's most advanced precision paver for all types of bituminous material. Oscillating tiltable screeds, almost instant width adjustability up to 12½', positive automatic leveling. Paves flush to curbs, gutters. All traction and heavy load confined to subgrade. Ask for Catalog BP-9.

CONCRETE PAVING CONTRACTORS: Get labor-saving mass-production with Jaeger Diagonal-Screed Finisher and Screw Spreader "Team". Ask for catalog.

JAEGER

engineered equipment

PUMPS • AIR COMPRESSORS • MIXERS

AGGREGATE PLANT under construction on canyon floor shows layout centering around single central screen house. Stacker track is at upper left; the raw aggregate reclaiming tunnel was built in trench. From central screen plant conveyor flights lead out to right over finished storage reclaiming tunnel. Sand storage is at left just behind machine shop. Belt at right leads to mix plant. —USBR Photo

Hungry Horse Sand and Gravel Processed in Push-Button Plant

Screens concentrated in single tower produce four sizes of coarse aggregate and three sizes of sand with automatic operation. Additional sand can be manufactured if needed.

PUSH-BUTTON CONTROL, automatic operation, traveling stacker piling for raw-material storage, single-tower screening and elaborate sand-processing equipment are features of the ultra-modern streamlined aggregate plant at Hungry Horse Dam. This big plant for processing aggregate for 2,900,000 cu yd of concrete for the U. S. Bureau of Reclamation's project on South Fork of the Flathead River near Glacier Park in Montana differs from the usual job-site plants described in this series in that the material handled is pit-run gravel and sand instead of crushed rock. However, the plant does include equipment for making sand from gravel to make up for any deficiency of fines in the raw material.

Hungry Horse Dam is a 2,900,000-yd high arched-gravity structure being built by General-Shea-Morrison for the U. S. Bureau of Reclamation as a combined flood control, power and irrigation project. General construction features were described in the December 1949 issue, p. 50, and clever tunneling methods in driving the glory hole spillway were covered in the November 1949 issue, p. 48.

The plant, located at the dam site, has a capacity to process 700 tons raw material per hr into four coarse and three fine sizes. Flow sheets and equipment lists are shown in accompanying drawings and tables. As an aid to following the various processes through the plant, a brief step-by-step description of operations follows:

1. Raw Aggregate Production—Raw material comes from a 110-acre pit at the junction of North and South Forks of the Flathead 5 mi below the dam. Here a 10-yd. Bucyrus - Monighan walking dragline digs pit-run material up to 50 ft deep, dumping into a grizzly-covered hopper that scalps out all cobbles more than 18 in.

From this loading hopper raw materials are hauled in 20-yd bottom-dump Euclid wagons to the plant over a beautiful 40-ft haul road built up of a 3-ft gravel base with water-bound macadam surfacing for easy maintenance. While hauling is at high speed, bonuses are paid the drivers for safe driving.

2. Raw Aggregate Storage—At the plant trucks from the pit dump into a receiving hopper. From here material goes via feeder and belt to a 6-in. rotary scalping screen, with oversize bypassed through a pair of primary jaw crushers. Then the

(Continued on page 60)

PLANT FEATURES

(Total number of similar items shown in parenthesis)

A. Jeffrey 42x60-in. vibrating feeder (5)

B. Link-Belt 6x18-ft, rotary screen (1)

C. Universal 20x36-in. primary jaw crusher (2)

D. Merrick 30-in. Weightometer (1)

E. Tyrock 5x10-ft double-deck screen (2)

F. Tyrock 5x12-ft double-deck screen (2)

G. Nordberg 3-ft cone crusher (1)

H. Universal 10x36-in. secondary jaw crusher (2)

J. 3,500-gal water tower (1)

K. Dorr 24-ft x 6-ft 8-in. Hydro-separator (1)

L. Tyrock 3x6-ft single deck screen (1)

M. Dorr 8-pocket sizer Type EX (2)

N. Dorr 5x25-ft rake classifier (1)

O. Dorr 5x25-ft rake classifier (1)

P. Dorr 8x30-ft rake classifier (1)

Q. Marcy 8x30-ft rod mill (1)

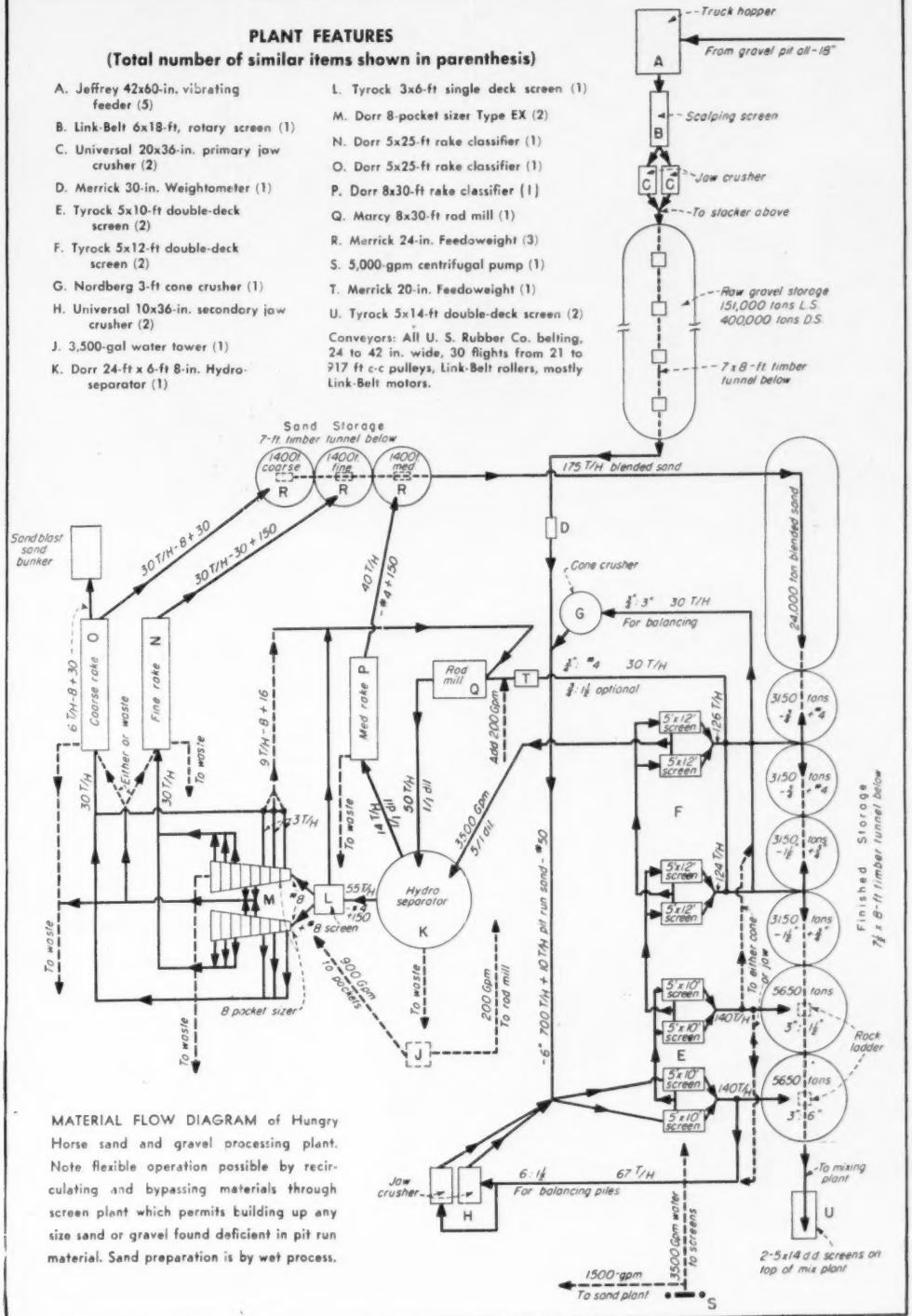
R. Merrick 24-in. Feedoweight (3)

S. 5,000-gpm centrifugal pump (1)

T. Merrick 20-in. Feedoweight (1)

U. Tyrock 5x14-ft double-deck screen (2)

Conveyors: All U. S. Rubber Co. belting, 24 to 42 in. wide, 30 flights from 21 to 917 ft c-c pulleys, Link-Belt rollers, mostly Link-Belt motors.



MATERIAL FLOW DIAGRAM of Hungry Horse sand and gravel processing plant. Note flexible operation possible by recirculating and bypassing materials through screen plant which permits building up any size sand or gravel found deficient in pit run material. Sand preparation is by wet process.

Contractor *Robert E. Green*

Clocked for 2 hours and 40 minutes on 1,000', one-way hauls, each C Roadster made 34 trips . . . averaged 10 pay yards per load in the heavy, damp clay. With their power-proportioning differential and positive electric steer, these rigs kept going when fall rains made the Owensboro, Ky., airport unworkable for all other units.

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off.
Tournarocker, Tournahopper—Trademark Reg.

By standardizing on Tournapulls, Green has steadily lowered cost per yard...and increased yards per hour

For more than 7 years, Green Construction Company of Oaktown, Indiana, has been moving dirt with Tournapulls. They started with Standard C's . . . switched to Super C's . . . then modernized their fleet with electric-control C Roadsters. Owner Robert E. Green reports that his new C Roadsters not only top all previous Tournapull records . . . they also beat crawler-scraper rigs on any haul over 100 feet. Here's what Green and his men have to say:

Robert E. Green, Owner . . . "Our C Roadsters haul more dirt, are cheaper to operate than tractors and scrapers on any length of haul over 100 feet . . . will work any day tractor-scrapers can work. These C Roadsters let us work more days a month than the Super C . . . load and dump mud better . . . do a much better job of finishing then either Super C's or tractor-scrapers. A set of Tournapull tires lasts me about 3 seasons."

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Send **NOW** *to:* **R. G. LeTOURNEAU, Inc., Peoria, Illinois.** for complete information on new, 190 h.p., 30 m.p.h. C Roadster-type Tournapull for use with:

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- ☐ 13.5 cu. yd. Carryall Scraper
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reports... 7 years OF LOWEST-NET-COST-PER-YARD with TOURNAPULLS

J. H. Hutto, Sup't. . . . "Loading, hauling and spreading, the Super C's are lost against C Roadsters. When job is wet, our Roadsters walk through, where we need a pusher on Super C's. This week, the Super C's were down 3 days because of rain . . . C Roadsters went right on working. In my opinion, you can't get any more dirt in a Super C than you can in a C Roadster."

Ralph Jones, Operator . . . "Have spent 4 years on Super C's, and 10 months on C Roadster. In good going, the Roadster will make 2 trips to a Super C's one. In soft going, really bad, Roadster will make 3 trips to Super C's 1 on a ½-mile haul."

Cecil Moore, Operator . . . "My C Roadster will go any place a D8 goes. Loads easier, does a better job of spreading and fine grading than a Super C. I like the sureness of electric controls."

Like Green Construction Company, you'll find it pays to standardize on Tournapulls for lowest-net-cost-per-yard . . . and keep ahead of competitive bidding by modernizing with the newest models. Today's electric-control C Tournapulls are good profit insurance against the future . . . assure you the pick of the jobs. Get all the facts from your LeTourneau Distributor, or write, today.

Bought 13 Tournapulls since 1942

Back in 1942, Robert E. Green, Oaktown, Indiana contractor, bought his first Tournapulls . . . 2 original Model C's. Since that time he has been a repeat Tournapull buyer, with: 5 Super C's in 1945 . . . 3 more in 1946 . . . modernized his fleet with 2 electric-control C Roadsters in 1948 . . . and bought another C Roadster, his 13th Tournapull, in May, 1949. At present time, Green is operating 8 of the rigs . . . 5 Super C's and the 3 C Roadsters.

Moved over 1,000,000 yds. last year

In December, 1948, Green started work on 500,000-yd. airport at Owensboro, Kentucky, moved 30,000 yds. before winter shut-down. Tournapulls started again in spring, worked until July, put dirtmoving well ahead of schedule . . . drove to 440,000-yd. levee at Plainfield, Indiana, moved 50% of yardage, helped finish levee 2 months ahead of schedule. Next, Green's Tournapulls moved 200,000 yards on 5 nearby road jobs . . . then drove back to Kentucky to finish up the grading on Owensboro airport (80% handled with Tournapulls). In addition to the 1,140,000 yards Bob Green moved last year, he used Tournatrailers with his Super C's for coal handling during winter months!

165 days ahead on airport schedule

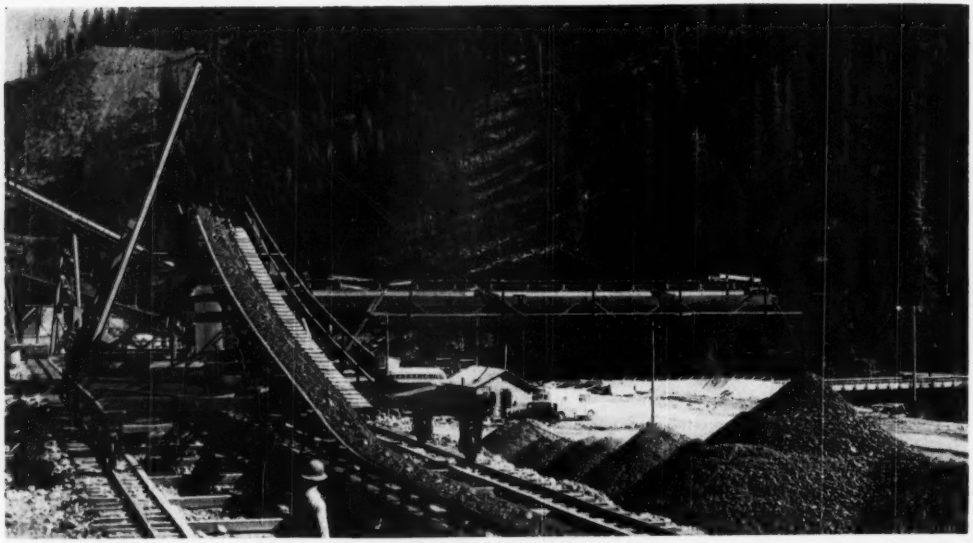
In spite of working in extra jobs, Contractor Green pulled off the 500,000-yd. Owensboro airport 165 days ahead of schedule. Here's the kind of Tournapull performance that helped him beat the completion date by a wide margin: On 2,000′ cycles, each C Roadster averaged a round trip every 4.3 min. (Super C's averaging same pay yards per load made 5 min. cycles on same length haul.) Combined output for the 3 fast C Roadsters: over 3,000 yards every 8 hours.

Cut job-to-job travel costs 50%

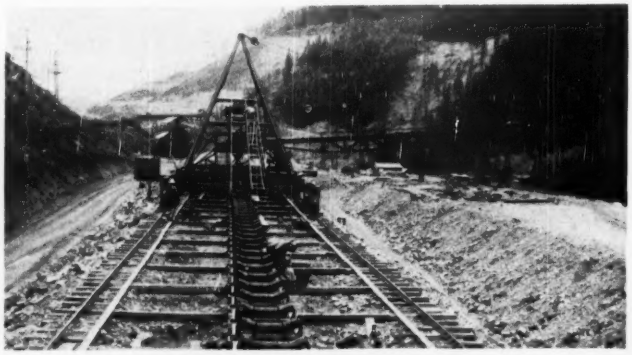
Bob Green further reports he has never shipped his Tournapulls anywhere . . . claims that by roading the fast, rubber-tired rigs around Indiana and Kentucky, he has cut moving costs 50% . . . and saves 9 out of 10 days rail travel time.

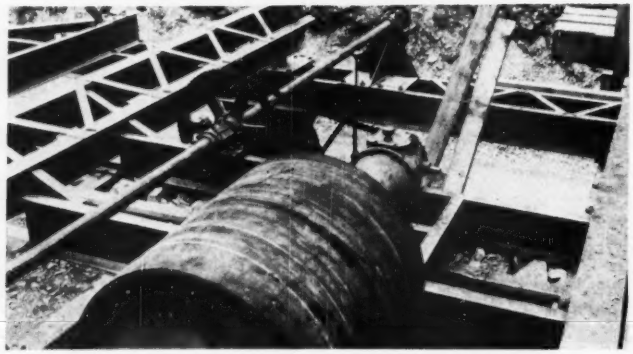
LETOURNEAU PEORIA ILLINOIS JOB-PROVED Over 6300 Built and Shipped TOURNAPULLS

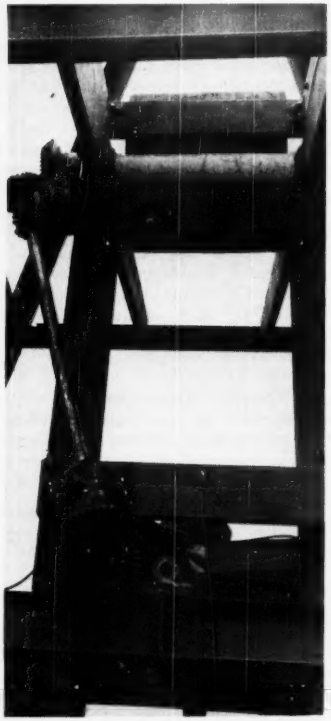
MORE YARDS PER HOUR WITH RUBBER-TIRED POWER



TRAVELING STACKER for piling raw aggregates in 550,000-ton storage is one of many features of excellent processing plant at Hungry Horse Dam. Long storage pile at right is over laminated timber reclaiming tunnel.—USBR Photo







SELF-POWERED STACKER takes care of all raw aggregate coming from pit. Main belt runs through stacker (top), discharging on to side belt. This is view of traveler under construction from head end; that is, gravel enters gantry from near side. Side discharge belt is driven from top pulley (bottom) on main supply belt line, with power transferred to side belt drive through bevel gears and jackshaft. Travel power for moving rig up and down track (above) is through lower pulley on main belt line, operating through gear reduction, clutch and chain drives to rail wheels. Rig rides on 25-ft gage track 800 ft long; carries 30-in. by 66-ft side belt.

(Continued from page 56)

raw material, now 6-in. maximum size, goes by belt to a traveling stacker—one of several ingenious features of the plant.

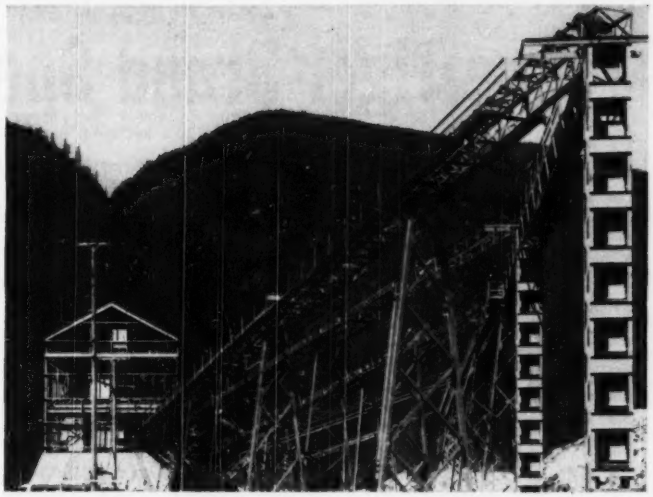
The stacker is a self-propelled gantry riding on 25-ft gage tracks 800 ft long. Centered between the tracks and running through the gantry is a 30-in. belt 850 ft long. Regardless of the position of the stacker along the track, this belt discharges on to another 30-in. belt 66 ft long carried by a side-boom. With this stacking rig it is possible to build up pile of raw aggregate about 900 ft long. Underneath the pile is a laminated timber reclaiming tunnel that can take care of about one-third of the 551,000 tons raw storage as live storage. Four vibrating feeders in concrete vaults transfer the aggregate from storage pile to reclaiming belt. The reclaiming belt passes over a Weightometer; thus all raw materials are weighed.

3. Screen Plant—All of the main screens, sand-classifying and sand-making equipment, are located in a single screen tower. Coarse aggregates are separated out by four sets of double-vibrating screens which screen out, in succession, 3-6-in., 1½-3-in., ¾-1½-in. and No. 4-¾ sizes, which all go to their respective storage piles over the finished stock reclaiming tunnel.

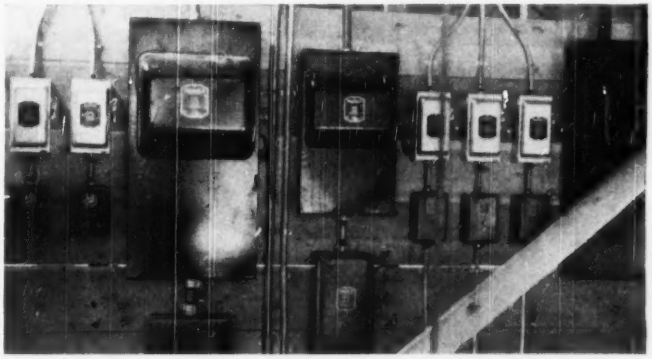
The four sets of screens are so arranged that material passing through one set passes on to the next. Material retained on all four sets of screens can be bypassed through crushers for further treatment to balance the proportions when needed: Cobbles can be sent through one of two jaw crushers; the No. 4-¾ and ¾-1½-in. sizes can be routed through a cone crusher; and the 1½-3-in. material can be bypassed through either the cone or jaw crushers. All re-crushed gravel goes back through the screens. This makes a very flexible arrangement for furnishing an ample supply of all four sizes of coarse aggregate, regardless of the natural sizing found in the pit.

4. Sand Processing—The plant is producing three classes of sand—fine, medium and coarse—first separately stored and then blended, with medium size predominating in the finished blend. The sand is prepared by the wet process, consisting of two parts—natural and crushed.

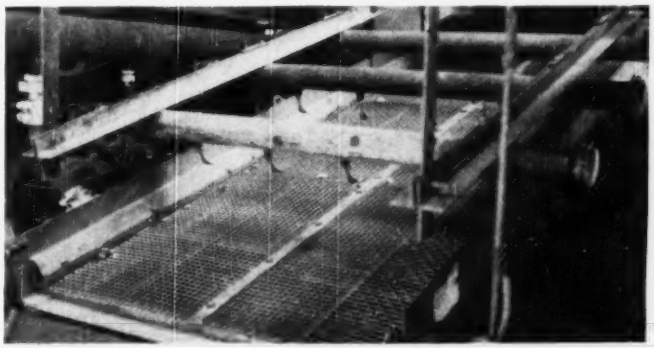
(Continued on page 64)



ALL FINISHED AGGREGATE comes out of this single screen tower. At right is finished product storage over tunnel, with rock ladders for cobbles and large gravel supported on concrete vaults. Some of conveyor trusses are salvage from Shasta Dam cableway tower.—USBR Photo



PUSH BUTTONS at central operating station within screen tower control all operations. Plant is completely automatic.



SPRAY NOZZLES set above screens is job planned and job built arrangement for washing fines destined for sand processing.

The Tiger Brand Specialist says-

"Here's what you should know about wire rope —and how to select, use and care for it."

THE three most important qualities that wire rope must possess are (1) strength, (2) fatigue resistance, and (3) abrasion resistance. Whether the rope is used on hoists, cranes, excavators, conveyors, loaders or unloaders, these properties are required in varying degrees depending on serivce requirements.

STRENGTH—This is determined by size, grade, and construction. Wire for wire rope can be made in any desired tensile strength ranging from iron grade at approximately 100,000 lbs. per sq. in. to improved plow steel grade at approximately 250,000 lbs. per sq. in. The knack of making Tiger Brand Ropes with uniform strength throughout shows the skill of the wire rope manufacturer.

FATIGUE RESISTANCE—The ability to make wire that will stand thousands of bends over drums and sheaves without breaking is no small accomplishment. The wire must be made with just the right amount of toughness and ductility. Tiger Brand Wire Rope is made from wire especially fabricated for wire rope use. Ropes composed of a large number of small wires will have higher fatigue resistance than those made with a smaller number of large wires.

ABRASION RESISTANCE—This is determined by the size and chemistry of the wires, especially the outer wires as they are exposed to the most wear. Obviously, the larger the wire size the greater the resistance to abrasion. Furthermore, the high strength steels are better able to withstand wear because of a greater carbon content. This means that improved plow steel ropes would have the highest abrasion resistance.

Getting the right balance

Individually, the properties of strength, fatigue resistance, and abrasion resistance are not difficult to obtain . . . but in wire rope making, it is impossible to accent one property without detriment to the other two. That's why the skill and experience of the men who make Tiger Brand Wire Rope are so important. Satisfactory performance demands that running ropes possess all three properties and therefore it is necessary to obtain an effective balance which meets the requirements of your particular job.

How to get longer wire rope life

Don't overload the rope.

Don't subject the rope to sudden impact loads.

Don't use undersize sheaves and drums—this is the commonest cause of fatigue breaks.

If vibration is present, make regular cuts from the end of the rope so as to change the dampened section.

Keep groove diameters proper size so as to avoid pinching of rope.

Avoid flange wear as a result of bad sheave alignment.

If grooves become fluted, it is usually a sign that the sheaves should be replaced with a harder material.

Lubricate regularly. Wire rope is a machine and requires adequate lubrication. It must also be protected from corrosion to retain strength.

Avoid kinking, improperly attached fittings, and uneven drum winding.

Make use of the Tiger Brand Wire Rope Specialist

It is very much to your advantage and to ours to maintain good operating practices. Call in the Tiger Brand Specialist at regular intervals and have him give you a FREE Check-up. He is thoroughly experienced in proper wire rope application.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Send for FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. B-20
Cleveland 13, Ohio

Please send me a copy of your catalog, "American Tiger Brand Wire Rope."

Name.....

Company.....

Position.....

Address.....

City.....State.....

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

LAMINATED TIMBER reclaiming tunnels are made up of 4x12-in. segments nailed together skin tight. Under sand storage, tops of tunnels are covered with sheet metal. Belt troughing and return rollers are carried on timber framing.—USBR Photo

(Continued from page 61)

All minus No. 4 material passing the fourth and last screen goes direct to a Dorr Hydroseparator, water borne with a 5:1 dilution. Deficiency of natural sand can be made up in two ways: **(1)** Recrushing by the cone crusher and recirculating through the screen system produces the bulk of the make-up; and **(2)** bypassing one or both of the smaller sizes of screened gravel over a Feedoweight scale for control and thence to a Marcy rod mill. Crushed sand from this mill is water borne to a bucket elevator and thence to the Hydroseparator.

Extreme fines under 150 mesh float away as waste from the Hydroseparator. Medium size sand goes direct from the separator through a rake to storage over the sand reclaiming tunnel. Pit run sand is routed from the separator through two eight-pocket sizers for division into coarse and fine fractions. If desired, coarse sand may be taken back through the rod mill. Otherwise, graded material from the sizers goes through dewatering to respective storage over sand tunnel.

Three Feedoweights control the loading of the sand-reclaiming belt so the proportions of the three sizes can be varied, as desired, into a finished blend. Blended sand is stored over the main reclaiming tunnel.

From the main storage all aggregates go by a 36-in. belt conveyor 1,600 ft long to top of mixing plant set high on the right bank. Here, to meet USBR rigid specifications, all four sizes of gravel must be re-screened by two 5 x 14-ft double-deck screens before they go to the batcher bins. Sand is bypassed around the screens direct to the batcher.

For the U. S. Bureau of Reclamation, Clyde H. Spencer is construction engineer in charge, David S. Culver is assistant construction engineer, Charles F. Palmetier is office engineer, E. J. Nieman is field engineer and John D. Officer is assistant field engineer.

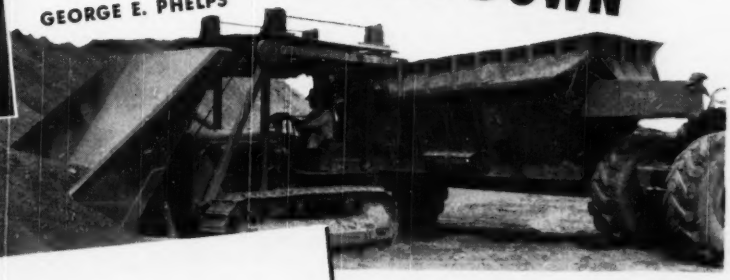
General-Shea-Morrison, general contractor on the project, is made up of a combination of 12 firms. C. W. (Smoky) Wood is project manager. Richard W. Jones, chief engineer on the job, supervised the design and installation of the aggregate plant. Dave Henderson is office manager and Mel Hord is assistant project manager. T. R. Harris, Tom Moyer and Les Gardner are general superintendents.

Trucks Away...

EMERGENCY AIR SHIPMENT of 8-ton, Four-Wheel-Drive truck with 5-cu.yd. Heil dump body is handled by Air Force "flying boxcars." Heavy equipment ordered by Bureau of Indian Affairs, Washington, D. C., was flown from Oshkosh, Wis., to Fort Hall, Idaho, to relieve Indians marooned by heavy snowstorms. Unit was equipped with Heil hydraulic hoist and snow plow.

"PRODUCTION UP... COSTS DOWN"

GEORGE E. PHELPS



PHELPS—WUNDERLICH—JAMES
ENGLEWOOD, COLORADO

(a joint corporation venture)

December 1, 1949

John Austin, Incorporated
707 First National Bank Building
Denver 2, Colorado

ATTENTION: Mr. John Austin

Dear Sir:

We have had one of your Austin 6-C Overshot Loaders in operation on our Cherry Creek Dam Job for the past three months and have found it to be a very efficient machine. Its jobs have been many and in each case it has proven to be a rugged, high-production loader.

We use this machine principally in loading blanket material and sand into Euclid bottom-dump wagons. Our production records are far beyond any expectations as we found that this machine would average 300 yards in a normal working hour, and at times reached a production rate of 350 cubic yards an hour, this operation being in blanket material and sand.

Maintenance costs are found to be at a minimum, with fuel consumption being about the same as for normal dozing operations. The fact that this loader does its own loading, cleaning, sweeping, etc., and is a one-man operation, has taken a large slice from our former loading costs. The Austin Overshot Loader has a definite place in our future operations.

We whole-heartedly recommend the Austin Overshot Loader for use in any operation similar to those in which it has proven itself on Cherry Creek Dam.

Very truly yours,

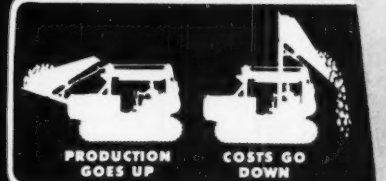
PHELPS-WUNDERLICH-JAMES

By Geo. E. Phelps

GEP:jrx1

300 CUBIC YARDS PER HOUR

NOTE: Rated Production on this 1 1/2 yd. unit is 225 yds. per hour



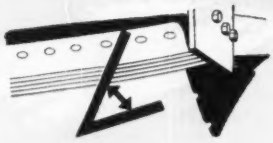
WRITE FOR FOLDER

John Austin, Inc.

Dept. CM

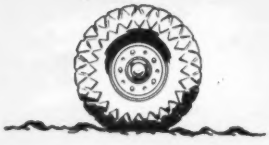
DENVER 2, COLORADO

BOOST PRODUCTION



EASY LOADING

Blade angle and design are two points that contribute to good or bad loading characteristics. The tough "Caterpillar" blade is set to shear hard-to-dig material, then direct and guide it into the loading chute. With 3 inches of special hard facing alloy deposited on these cutting edges, the user is assured of a blade that sharpens to a keen edge.



BIG TIRES . . . MORE TRIPS

When ground conditions deteriorate, air pressures are usually reduced to keep tire penetration at a minimum. The big and oversize tires used on "Caterpillar" Scrapers are able to have their pressures greatly reduced without overloading. That means they stay on top, roll more easily, allow hauling in higher gears and aid in piling up real yardage records.

'DOZER-TYPE EJECTION

'Dozer-type ejection rolls sticky clay out of the bowl with ease and precision. Typical of "Caterpillar" finely engineered design are the ejector plate guide rollers. These heat-treated rollers are mounted on adjustable eccentric shafts so that proper clearance may always be maintained between bowl sides and ejector plate. Binding or rubbing problems are eliminated.

CATERPILLAR

REG. U. S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS

AND CUT COSTS

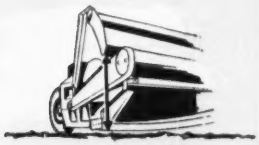
with "CATERPILLAR" SCRAPERS

WHEN the chips are down, you can count on a husky "Caterpillar" Scraper to come through for you. Stamina is built into every inch of its hide to stand terrific punishment. Its finely engineered design enables it to speed through jobs that slow down ordinary units. Pair it with its matching "Caterpillar" Diesel Tractor, and you've got a team that saves you money two ways—in higher production and lower maintenance costs.

Pictured here is a "Caterpillar" No. 80 Scraper rated at 18 heaped yards with its matching D8. Owned by Eau Claire County, Wisconsin, this team pays dividends every pay load. Making a trip every 7½ minutes on an 1800-foot round-trip haul, its average production is about 800 bank measure cubic yards per 8-hour day.

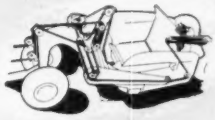
You can't talk quality into a machine. You've got to build it in—take a look at the "Caterpillar" Scraper's features and you'll see why this big yellow slugger really rates with men who know earthmoving. Better still, call your nearby "Caterpillar" dealer today for information and a demonstration!

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS



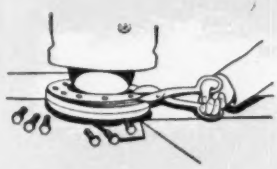
GOOD APRON DESIGN

"The sky is the limit" when raising the aprons on "Caterpillar" Scrapers. Open-top scraper design combined with long apron arms located outside the bowl assure the free ejection of heaping sticky loads. When ejecting fine materials such as sand, the maximum apron height can be reduced to provide a smooth spread with no gaps.



ENGINEERED CABLE SYSTEM

The entire "Caterpillar" cable control system is finely engineered to give constant easy performance. Accurately aligned heat-treated sheaves prevent cable chafing and minimize power drain on the tractor engine. All cables are shielded against abrasive materials, yet one man can easily thread the entire unit while keeping both feet on the ground.



LOW MAINTENANCE COST

Typical of "Caterpillar" in-built quality is the ball and socket joint connecting gooseneck to front axle. The ball is induction hardened with a tough center to withstand both wear and breakage. Spherical design enables the scraper to be maneuvered into extreme positions without binding. Shims are removed as wear occurs and a bronze liner rides between ball and socket to prevent steel-to-steel contact. Lubrication is through a single Zerk fitting.

DIESEL

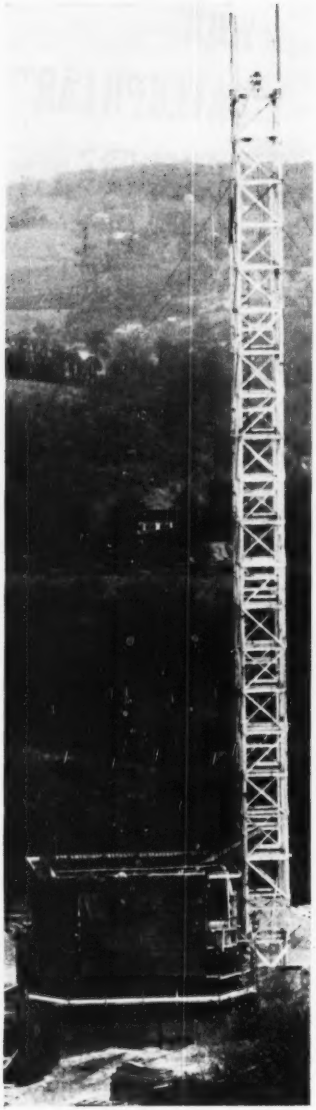
EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO.
Box CM-2, Peoria, Illinois

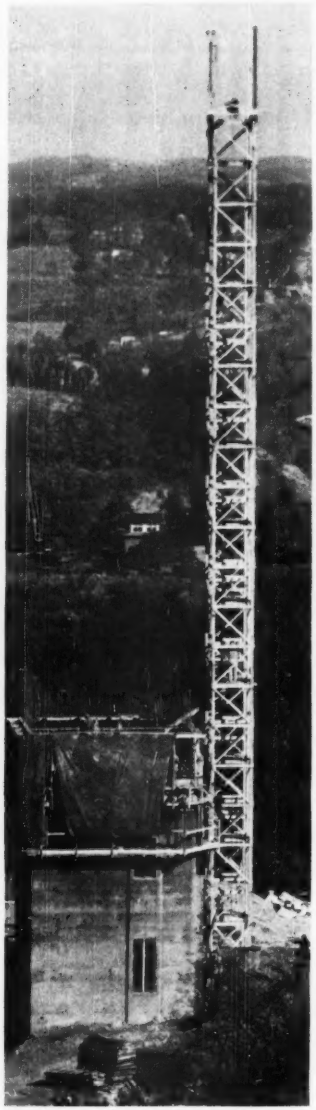
Send me, without obligation, booklet, "'Caterpillar' Scrapers Are Profit Makers."

Name _____

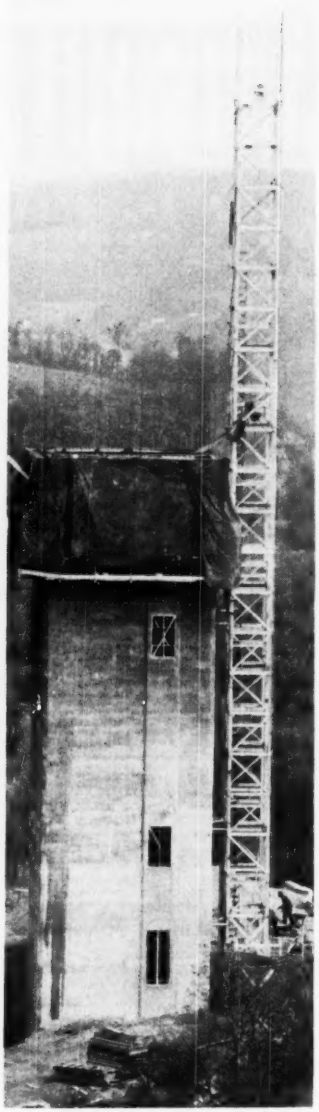
Address _____



Oct. 12 Two days of continuous concrete placement and 24x24-ft. concrete building reaches ground level, 35 ft. above foundation slab.



Oct. 13 Already up 53 ft., she inches toward top of timber-framed, men-and-materials tower at an average rate of 18 ft. per day (three shifts).

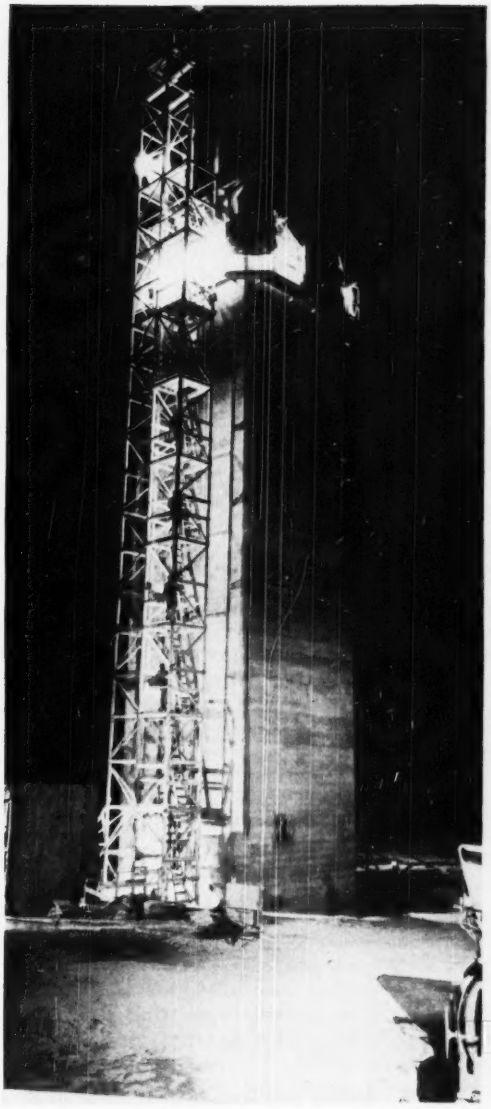


Oct. 15 Top of concrete radio relay building is now up 89 ft. above its foundation. Canvas "tarps" protect workmen, as well as new concrete.

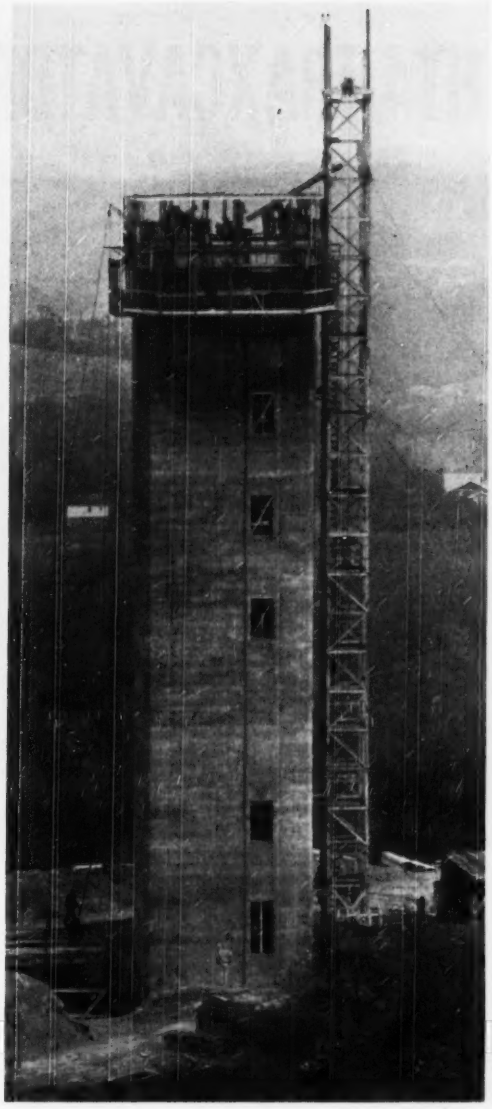
Sliding Forms Shoot Video Relay

RAISING THEMSELVES by their own boot-straps aptly describes builders of tall structures employing the sliding forms method. Many types of buildings lend themselves to this method of construction, but none to better advantage than eight tall video relay buildings completed last summer and fall by Rust Engineering Co., of Pittsburgh, Pa.

Measuring 24x24 ft. out-to-out of 12-in. walls, the buildings vary from 80 to 127 ft. high. They are located about 30 mi. apart, forming a radio and television relay chain in southern Pennsylvania for the American Telephone and



Oct. 16 Photographic proof that darkness doesn't stop 'round-the-clock operations. Nighttime concreting progress equals daytime speeds, chiefly because job is being well lighted by many floodlights on ground, platform and tower.



Oct. 17 Topping-out at 127 ft. above base. Behind tarpaulin windbreaker is exterior catwalk with safety rail, used by concrete finishers. Concrete and jacking crews ride platform on interior forms.

Building 127 Ft. Skyward in 7 Days

Telegraph Co. Each building has 4 or 5 floors, connected by a stairwell, to house operating equipment.

Each building also supports large horn-shaped directional antennas to receive, amplify and transmit super high-frequency microwaves on to the next relay building.

Shown in the accompanying photos are the various steps in building the 127-ft. Troy Hill building just outside of Pittsburgh.

The other 7 buildings were built in a similar manner, all using sliding forms. This method re-

(Continued on page 72)

HT4 TRAXCAVATOR works at CAPACITY

Note how the HT4 Hydraulic TRAXCAVATOR carries its heaped load, in low position, to clear under a low ceiling. The unit is subgrading for a concrete floor at General Electric Supply Corporation's new warehouse and office building at Nashville. Owner: McDowell & McDowell, Nashville.

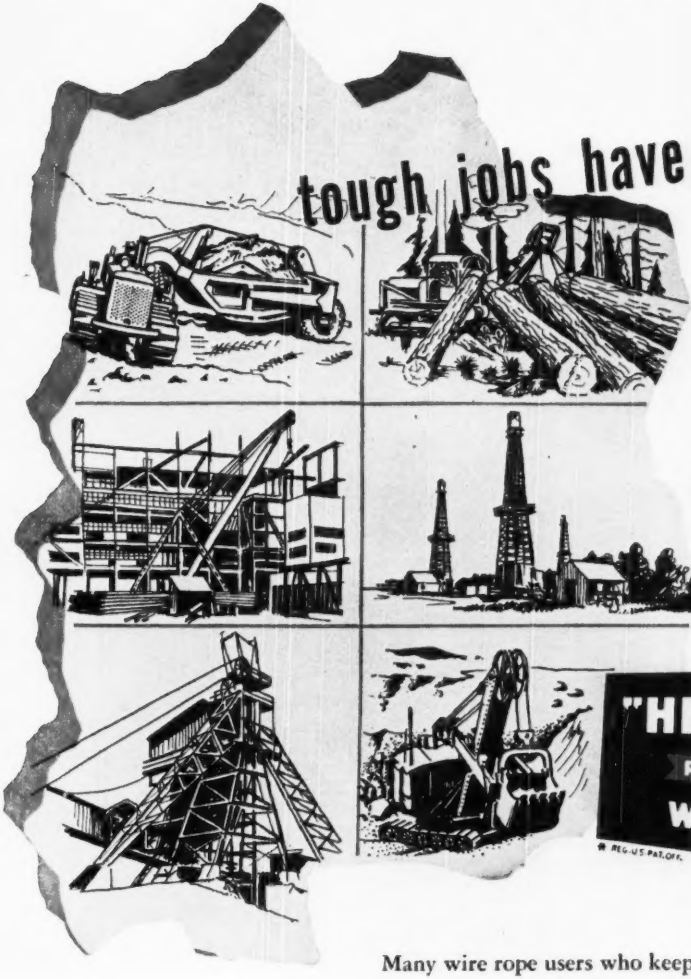
Wherever its compact "Caterpillar" Diesel Tractor team-mate can enter without bumping the operator's head, there the HT4 Hydraulic TRAXCAVATOR does its stuff at full capacity.

It digs hard material, crowds its bucket heaping full, with traction-harnessed engine power and hydraulic down pressure. *It lifts* the load smoothly to any height desired, for clearing low overhead obstructions. *It carries* at your choice of 5 practical speeds, from slow creep to brisk sprint. *It dumps* from any lift point.

For the Model HT4 TRACKSON TRAXCAVATOR is mounted on a "Caterpillar" Diesel D4 Tractor, and is operated by the dependable, constant-power "Caterpillar" hydraulic system. The valve has 4 positions — raise, lower, hold and float. Lifting arm cylinders are double-acting — so are bucket control cylinders. That enables exerting down pressure; gives complete bucket control.

Every practical operating feature asked for is built into the HT4 — the hydraulic companion of the world-famous line of cable-controlled TRAXCAVATORS. Sold and serviced by your TRACKSON-"Caterpillar" dealer! See him for complete information or write TRACKSON COMPANY, Dept. CM-20, Milwaukee 1, Wis.

HT4 Hydraulic **TRAXCAVATOR**® *The Original Tractor Excavator*



tough jobs have long been the PROVING GROUNDS for "HERCULES" RED-STRAND WIRE ROPE

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Many wire rope users who keep an eye on their operating costs have proved by the accurate yardstick of performance that "HERCULES" (Red-Strand) Wire Rope provides longer wear . . . faster and more *continuous* work . . . increased profit.

Such results are never a matter of chance; definite policies involving materials, manufacturing methods, equipment and experience, insure them.

Made in Round Strand and Flattened Strand constructions, Preformed or Non-Preformed; there is a correct type for every purpose.

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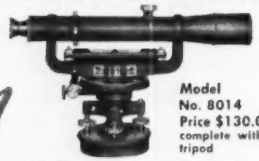
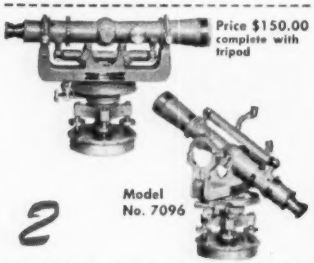
LOW PRICE MODELS



1

Model No. 8014
Price $130.00
complete with tripod

Finest 12" Dumpy Level available anywhere—gives you more features you want, more accuracy, more durability at less money than any other instrument. It has dust and dirt-free internal focusing and has coated optics for clearer distortion-free, sharper images.



Price $150.00
complete with tripod

2

Model No. 7096

Here's the standard convertible level for the country for the past 50 years! No other instrument has the recognition and acceptance as given to the David White Carnegie Improved Convertible level. Now it's available to you with complete dust and dirt-free internal focusing and coated optics for clearer, sharper, distortion-free images.

Model No. 3000
Price $165.00
complete with tripod

3

The David White "Universal" level-transit is the most practical and complete builder's instrument on the market. Now available in a *new improved model* — complete with internal focusing, coated optics — guarded vertical arc — in fact every possible feature to assure you lifetime durability and extreme accuracy.

CHOOSE the exact instrument you need from these three. Compare their outstanding features, their precise, yet rugged construction, their accuracy *and their price* with all others. Then you'll see why we say you'll buy "right" when you buy a David White. For complete information on any one or all three of these instruments, consult our nearest dealer — or write direct to David White Co., 343 West Court Street, Milwaukee 3, Wisconsin.

DAVID WHITE COMPANY

We offer complete, prompt repair service on all makes of instruments — levels, transits, theodolites, etc.

CEMENT IS HAND FED and aggregates are wheelbarrowed to concrete mixer spotted at base of building. Well-guyed and well-braced, materials tower has one open shaft for concrete hoist and one stairwell with sloping, fixed ladders, platforms and safety railing to protect workmen climbing tower. Finishers work under canvas protection.

(Continued from page 69)

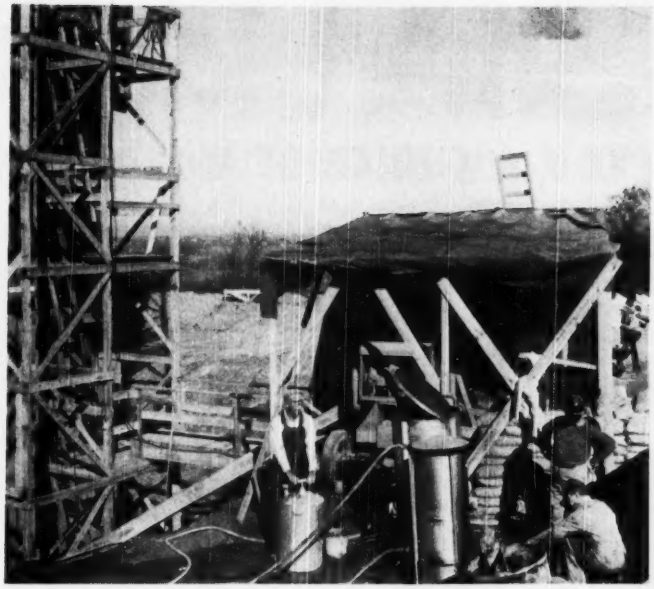
quires no tubular scaffolding inclosing the building, as was needed on a similar tower near Lorain, Ohio, which was built by the panel, or fixed-forms method. (See CONSTRUCTION METHODS AND EQUIPMENT, January, 1950, p. 50.)

Rust Engineering Co. didn't waste any time on the Troy Hill building. An open excavation was made by clamshell and bulldozer to a depth of 29 ft. below ground to get good foundation material.

Following completion of the foundation slab, erection of the 150-ft. timber-framed men-and-materials tower was started on Oct. 3. One week later it was completed, and the forms had been assembled on the foundation ready to slide upward as concreting of the walls progressed.

The forms were 4 ft. high, made up of tongue-and-groove flooring inside of 2x8-in. wales. Timber yokes extending up the sides of the forms, and crossing above them, held the forms securely in place. The top cross-piece of each of the 26 yokes served as a jacking member to slide the forms upward.

Twenty-six 1-in.-dia. smooth rods embedded in the center of



CONCRETE IS CHUTED direct from mixer into ½-yd. bucket at bottom of materials tower. Water heater takes chill off of concrete materials, while standby mixer insures continuous production of concrete.

the walls supported an equal number of screw jacks for raising the forms. The force of the hand-operated screw jacks was taken against a collar clamped around the 1-in. vertical rods by setscrews. When the threads of the jacks were exhausted, they were released and retracted. The collars then were loosened, moved up and re-tightened, ready for another round of jacking.

A completely decked platform inside the exterior walls rode along with the forms, serving as a working deck for the concreting crew. Concrete finishing crews worked on an exterior catwalk surrounding the building and suspended from the forms.

Average speed of pouring the 12-in. exterior walls on this building was 9 in. per hr. There was nothing unusual about placing the concrete. It was mixed in a small mixer at the base of the building, chuted into a ½-yd. bucket, hoisted to the working deck and wheelbarrowed into place. The top 6 in. of concrete was lightly vibrated. Wall surfaces were given a rubber float finish and cured with water.

Reinforcing steel was raised to the working deck by hand hoists attached to timber outriggers. The average crew for each shift included two iron workers, four carpenters, two operators, two concrete finishers, nine laborers and one foreman.

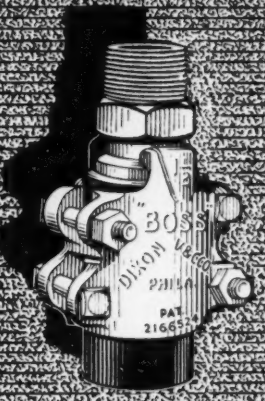
The interior working deck also supported the roof slab. Interior floors were poured after the shell and roof were completed. Forms for these floors were supported on specials anchorages embedded in the walls, and the concrete was hoisted and chuted in through window openings.

The five floor slabs are each supported on reinforced concrete beams along two sides, extending into recessed pockets formed in the exterior walls of the building.

N. F. Godfrey was project manager for Rust Engineering Co. on the Troy Hill building which was completed Dec. 1, 1949. C. G. Thornburgh, Jr., was assistant project manager and Wayne Hoback, construction superintendent. C. D. Haxby was general superintendent for all 8 buildings. J. C. Hogan was resident engineer for the American Telephone and Telegraph Co., on the Troy Hill job.

Cash for Your Job Photos—See page 83

GENUINE...
in Name and Service



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21 Smart ideas

ONLY FORD GIVES YOU A CHOICE OF V-8 OR SIX

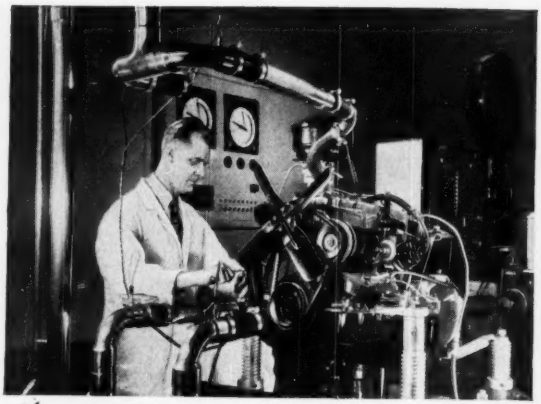
The Ford Truck line for 1950 gives you new models, new ratings, new power, new features—21 smart ideas in all, to help cut trucking costs.

NEW MODELS like the F-3 Parcel Delivery, which expand the 1950 Ford Truck line to over 175 models. This wide selection means that you should see your Ford dealer for the right truck for you, no matter what you haul. New G.V.W. rating increase on Series F-6 and F-8.

NEW POWER like the brand-new 6-cylinder Rouge 254 truck engine. Thus, for 1950 you have a choice of four great engines, two Sixes, and the only two V-8's in trucking. Only Ford gives you a choice of V-8 or Six.

NEW FEATURES like the full air brakes now available on the 1950 F-8 Big Jobs . . . single-speed axles for the F-6 and F-8 . . . new Synchro-Silent transmissions . . . new features that make driving safer and easier.

New models! New ratings! New power! New features! You'll find all these smart ideas in Ford Trucks for 1950. And you'll find the smartest idea of them all . . . Bonus Built construction which means big reserves of strength and power. That's why a 1950 Ford Truck is the smart buy for you. Your Ford Dealer can arrange quick delivery on most models. See him today!



★**NEW 110-HORSEPOWER SIX!** The new Rouge 254 makes the 1950 Ford F-6 the most powerful 6-cylinder Ford Truck ever built. The thoroughly proved 254 has Free-Turn exhaust valves, Autothermic pistons, chrome-plated top piston ring, High-Lift camshaft, and many other power-producing, cost-saving, smart ideas. ★ A brand-new, 4-speed Synchro-Silent transmission engineered for quiet operation, easy shifting and long life is standard with the new 254 engine.

Model F-2; 5,700 lbs. G.V.W. Express or Stake

Model F-1; 4,700 lbs. G.V.W. Panel, Pickup or Stake

Model F-3; 6,800 lbs. G.V.W. Express or Stake

Model F-5; 14,000 lbs. G.V.W. Wheelbases; 134, 158 and 176 in.

Model F-4; 10,000 lbs. G.V.W. with Duals

Model F-3 Parcel Delivery Wheelbases; 104 and 122 in.

America's No. 1 Truck Value!

No. 1 in sales gains. Registration figures show Ford Trucks are scoring bigger sales gains than *all other makes combined*, based on the latest three months, compared to the first three months of 1949!

No. 1 in choice of engine types. Only Ford gives you a choice of V-8 or six-cylinder engine design.

No. 1 in experience. Latest registrations prove that 2,003,155 Ford Trucks on the road have marked up 18,567,865 truck years of experience . . . a record equalled by no other truck.

No. 1 in long life. Using latest registration data on 6,106,000 trucks, life insurance experts prove Ford Trucks last longer.

No. 1 in value. Over 175 models! The only V-8's in trucking! Two 145-h.p. Big Jobs rated up to 39,000 lbs. They're Bonus Built which means big reserves of strength and power.

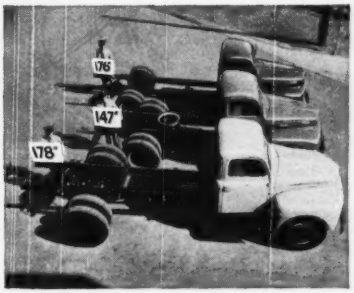
Ford Trucks Cost Less Because—

for 1950!*

—IN A FULL LINE OF OVER 175 TRUCK MODELS!

★ **NEW F-7 REAR BRAKES!** Big 15"x 5" hydraulic, dual cylinder. High torque self-centering action both forward and reverse.

★ **NEW AIR BRAKES** available on the Ford Series F-8 Big Job combine smooth flexibility with immediate, positive action.



★ **NEW WHEELBASES!** Three of them for 1950 Ford Trucks. Series F-5 and F-6 now have a 176-in. wheelbase for bodies in the 15-ft. range. The 145-horsepower Ford Big Jobs have added two new wheelbases to get a total of five. First, a 147-in. wheelbase for tractors and dump trucks. Second, a 178-in. wheelbase for 15-ft. bodies.

★ **NEW PARCEL DELIVERY!** Forward control chassis with grille, windshield and quarter-windows. You add your choice of bodies. Available in Series F-3 and F-5 (Special order).

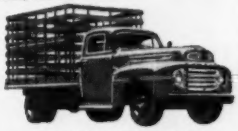
★ New single-speed rear axle for F-8 ★ New extra-heavy duty clutch with 254 engine ★ Million Dollar Cab Air Wing door glass ventilators ★ Level Action cab mounting New Double Channel frame for Big Jobs ★ Gyro-Grip Clutches ★ New single-speed axle for F-6 ★ Roll Action Steering ★ New extra H. D. drive line with 254 engine ★ Quadrax rear axles ★ 4 engines—choice of V-8 or Six ★ New heavy duty, 3-speed Synchro-Silent transmission available for F-1 thru F-3 ★ Choice of over 175 models ★ Bonus Built construction.

One of many 145-horsepower Ford F-8 Trucks operated by Michigan Motor Freight Lines, Inc. of Detroit, Mich.

Model F-5 Cab-Over-Engine
14,000 lbs. G.V.W.

Model F-5 School Bus Chassis
Wheelbases: 158 and 194 in.

Model F-6 Cab-Over-Engine
16,000 lbs. G.V.W.



Model F-6; 16,000 lbs. G.V.W.
Wheelbases: 134, 158 and 176 in.

Model F-7; 19,000 lbs. G.V.W.
35,000 lbs. G.T.W.

Model F-8; 22,000 lbs. G.V.W.
39,000 lbs. G.T.W.

FORD TRUCKS LAST LONGER

Using latest registration data on 6,106,000 trucks, life insurance experts prove Ford trucks last longer!

Quick Steam for Winter Pours

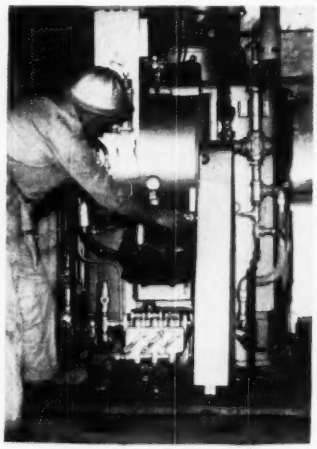
BUGGS ISLAND DAM is Corps of Engineers' flood control and power project on Roanoke River near South Hill, Va. Concrete section of dam will be 2,785 ft long, 145 ft thick at base, 144 ft high, and will require 650,000 cu yd of concrete.

CONCRETING at Buggs Island Dam is continuing this winter under a full head of steam, literally. Key units on the winter pours are a pair of small but high-steaming generators that furnish plenty of steam for water and aggregate heating and concrete curing.

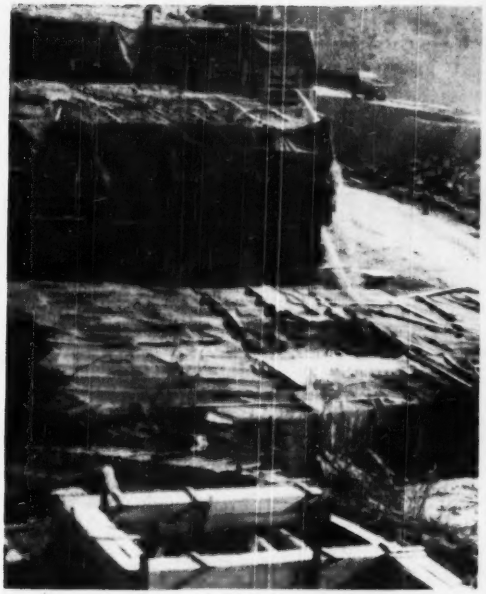
Corps of Engineers' specs for concrete at Buggs Island call for it to be delivered to the forms at between 40 and 62 deg. Also, air in contact with each newly poured lift must be maintained between 50 and 70 deg for the first 5 days and above freezing for 9 more. And the concrete must be kept moist during the curing period.

To get the concrete mix above the 40-deg minimum, steam is directed through spray heads into the concrete plant's water storage tank and aggregate bins. To keep the pour within the correct temperature and moisture range, steam is admitted beneath tarpaulins covering the top of the lift.

Two Vapor steam generators



STEAM FOR CURING CONCRETE sprays through 1/8-in. holes in 1-in. pipe (left). Small Vapor steam generator (right), is one of two that supply all steam needed for heating water, aggregate and pours. Unit burns No. 3 fuel oil atomized under pressure; uses only half quantity burned by two conventional boilers it replaced when they could not deliver required steam. Water is continuously turned to steam as it proceeds through generator's 500 ft of seamless steel coil. Blow-down takes only 5 min. One 5-hp motor drives water pump, fuel pump, blower and ignition. Unit produces 3,600 lb of steam per hr.



TARPAULINS cover tops of 5-ft lifts to confine steam. In foreground is expansion loop in steam main, which is insulated with sawdust and enclosed in wooden envelope.

FROM VALVED TAPS in main at base of each monolith, steam enters hose to particular block being cured. Generator was supplying 100-lb steam to main 1½ hr after it was delivered.

supply all the steam required. Each takes only 35 sq ft of floor space, yet can develop 3,600 lb of steam per hr and reaches full working pressure in 2 min from a cold start. Automatic controls maintain pressure at any predetermined setting between 75 and 300 psi.

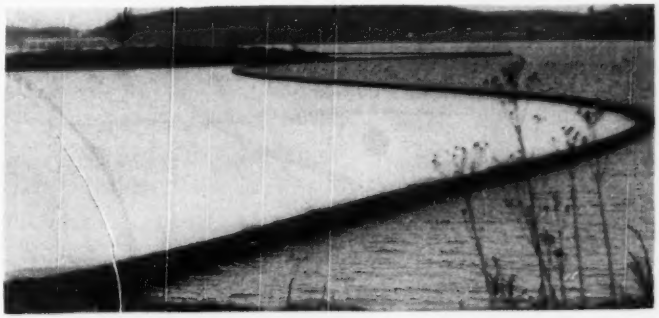
One generator is in the compressor house adjacent to the concrete plant. While its prime function is to heat aggregate and water for the mix, it is hooked into the main from which steam is drawn for curing. It also develops extra steam for warming stockpiles and equipment and for thawing the hopper cars that deliver aggregate from the quarry.

The second generator is housed in a temporary shanty beneath the construction trestle at the dam's downstream face. It supplies wet curing steam to maintain, automatically, 100-lb pressure in a 3½-in. main that extends 950 ft along the dam. Output of this generator is sufficient to take care of six monoliths at a time. The steam generator in the compressor house is valved into the line when more must be cured simultaneously.

From taps in the main, a 2-in. steam hose leads to each monolith to be cured, feeding into the center of the base of a 90-ft U-shaped assembly of 1-in. pipe laid on top of the pour. The ends of the U are blanked, and steam escapes from ⅛-in. holes drilled on 1-ft centers throughout the length of the pipe. It is confined over the pour by tarpaulins draped 6 ft above on timber framing.

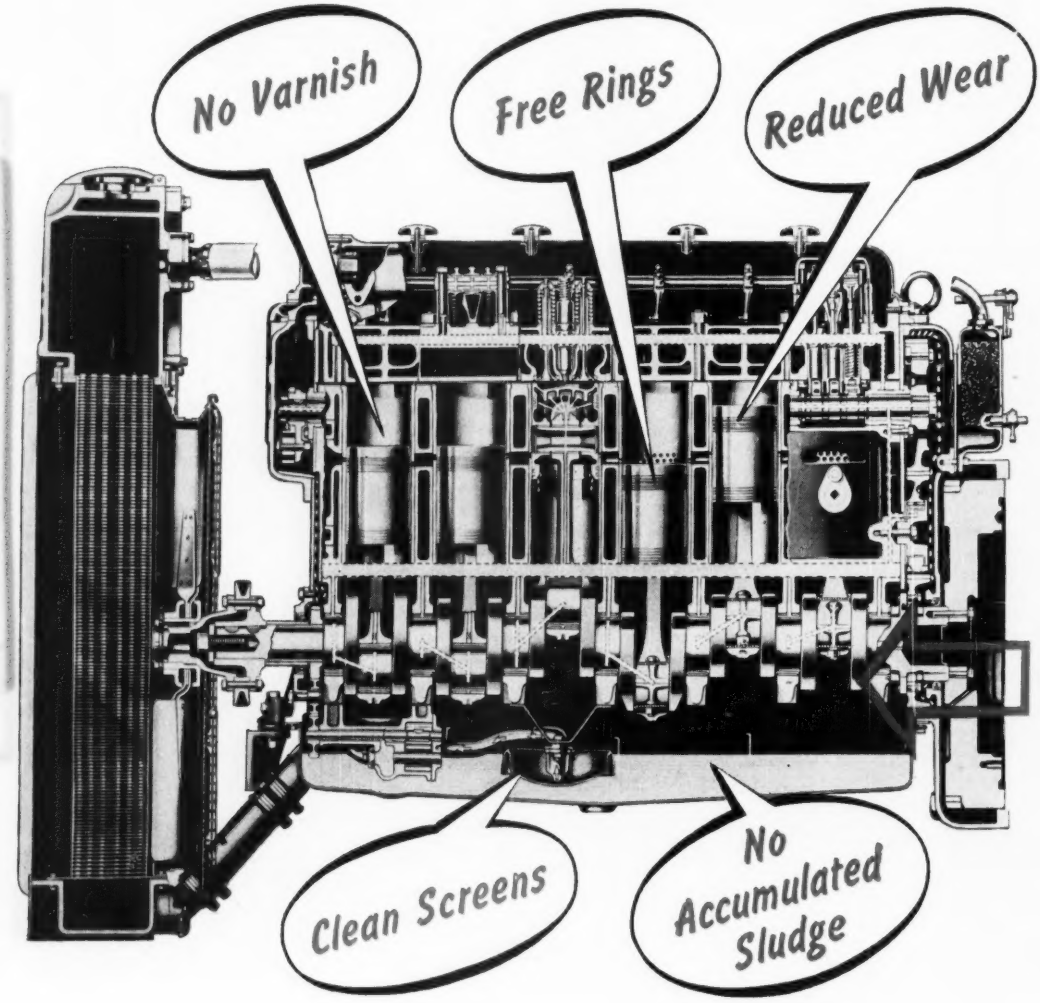
Contractor for the dam and substructure of the powerhouse is Jones - Tompkins - Wright, South Hill, Va., a joint venture of J. A. Jones Construction Co., Wilmington, N. C.; Charles H. Tompkins Co., Washington, D. C.; and Wright Contracting Co., Columbus, Ga. Project manager is A. L. Pauls. Resident engineer for the Corps of Engineers is Fred L. Geis, Jr., under Col. George T. Derby, Norfolk District Engineer.

Corrugated Pipe Survives the Bends



WIND BENT this 1,600-ft floating line of Armco Asbestos-Bonded pipe into double reverse curve shown; then blew it back again, undamaged. Made up on shore, forward end was secured to barge and towed across lake. Power launch stalled and sudden wind took over. Corrugations contracted and expanded in accordion fashion. Later, with helpful wind, pipe was lined up, barge pulled out and line sunk to lake bottom in just the right spot. English Construction Co., Alta Vista, Va., sank pipe for outfall sewer of Burlington Mills Co., Dublin, Va.

In SEVERE DUTY..
Can Double Engine



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New Sinclair SUPER TENOL is an oil specially developed to eliminate the high maintenance costs so frequently encountered in both types of "severe duty" service: — 1. High temperature, high speed, over-load; and 2. Low temperature, light load, long idle, stop-and-go.

Under these abnormal conditions, operators report new SUPER TENOL has more than DOUBLED the life of their equipment between overhauls.

If you operate diesel-powered or gasoline equipment in severe duty service it will pay you to change to new SUPER TENOL now—to keep equipment in operation many more days each year, to save time, labor and money.

DUTY LUBRICANTS

Counsel or Write to Sinclair Refining Company, 630 Fifth Avenue, New York 20, N. Y.

LEGAL DECISIONS CONCERNING CONSTRUCTION

The Bound Subcontractor

"THERE ARE TWO conditions that I want in the contract," the owner stated.

"What are they?" was the contractor's question.

"The first one should be worded something like this; 'That the decision of my inspector as to quantity and or quality of the work is to be final and conclusive.'"

"And the other one?" the contractor asked.

"I cannot say it in legal phraseology, but the contract should state that any subcontract under you would be bound by the contract between you and me," the owner explained.

"I'll agree to both of those conditions. Let's find a lawyer and have the contract drawn up," the contractor suggested.

The contract was duly executed and signed, and it contained the owner's stipulations.

The contractor started work and then decided to sublet part of the job. He made a satisfactory arrangement with John Doe.

"Here is a copy of my contract with the owner," the contractor stated.

Doe took the copy, tossed it in his desk, and went to work and soon completed his part of the job.

"Here's a check in full," the contractor offered.

"That's $2,000 short," Doe countered.

"The amount is based on the inspector's report, and his report is binding," the contractor stated.

"It might be so far as you are concerned, but I wasn't a party to your contract," Doe insisted.

"Yes, and you knew what was in my contract. I gave you a copy," the contractor recalled.

"I'm not bound and I want my $2,000 over your figure," Doe stated.

However, it has been held by the Maryland Courts in a case reported in 124 Md. 283 that; "Doe knowing the contents of the contractor's contract he is bound thereby."

The Agent's Lease

"I UNDERSTAND that you are the agent for the owner of the vacant shop on the corner of First Street and Lawn Avenue," the contractor remarked.

"I am," the agent admitted.

"Well, I want to rent it at not more than $200 per month."

"$250 is our lowest figure."

"Well, I'll not stick on $50 a month; but have you the proper authority from the owner to execute a lease?"

The agent produced a letter signed by the owner.

"I hereby authorize you to lease my building on the corner of First Street and Lawn Avenue for the rental hereafter specified and to execute proper leases under seal," the letter read.

"That's satisfactory," the contractor agreed. The lease was duly signed and sealed by him and the agent, but the contractor, in order to be on the safe side, promptly notified the owner of the transaction.

"I've already leased the shop for $275 per month," the owner declared.

"I saw a letter from you to the agent authorizing him to lease for $250 per month, and here's my signed lease," the contractor retorted.

The owner looked at the seals and signature.

"Worth less than one of Hitler's promises," the owner remarked. "The lease is under seal, and the law is that the authorization of an agent to execute a lease under seal must be given under seal. My letter wasn't, so my letter is not sufficient authority to make your lease good."

The owner was right, as the California, Illinois and Indiana Courts have ruled in his favor on this point.

The Warranties And Damages

IF THE CONTRACTOR buys paint, and the seller guarantees that it is of a particular quality, quantity, etc., the transaction opens up a wide field, but the general rules are well understood, namely:

(1) If the contractor discovers in time that the paint is not as warranted, he may refuse to take delivery.

(2) If the seller sues for damages for non-acceptance and nonpayment, the contractor may plead a breach of warranty by way of defense.

(3) If the contractor has accepted the paint, but has not paid for it, he may allow the seller to sue for the price and use the breach of warranty to reduce the amount.

(4) If the contractor has paid for the paint before he discovers the breach of warranty, he may sue the seller for damages.

These rules are very elementary ones. But suppose that the contractor sues for damages. What amount of damages is he entitled to recover?

On this point the American courts without exception have ruled that the amount of damages is the difference between the actual value of the paint and what the value would have been if it had been as warranted.

The following is a fairly complete list of the State Courts which have approved of this rule:

Alabama, Arkansas, California, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington and Wisconsin.

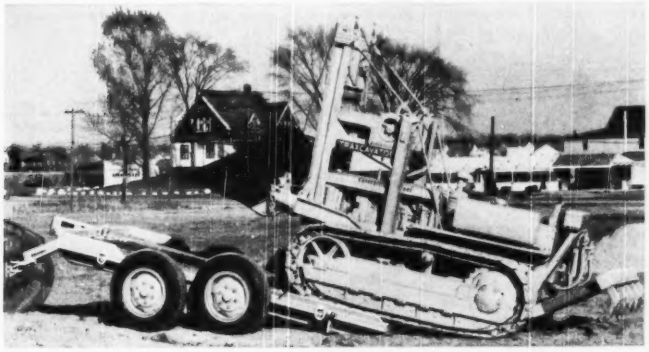
MOBILITY MEANS BUSINESS

When there is real work to be done, profit-minded equipment users are turning to this money making package unit, consisting of a MARTIN Model 222 Trailer and T4 "Traxcavator."

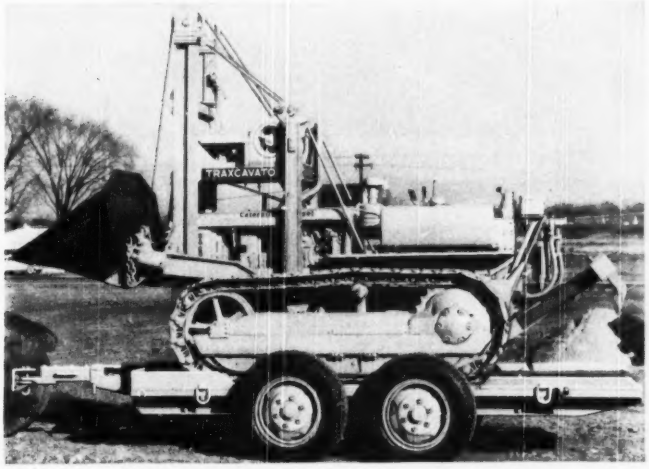
Designed especially for this package combination, the MARTIN Model 222 Trailer adds mobility to the equipment on or off the highways, cutting down the time in moving from job to job, allowing the handling of a series of jobs and eliminating many hours of lost working time. It converts moving time into profit time and makes it possible to do that small job between those big jobs. The operator merely drives on and pulls away, drives off and goes to work.

Quickly and safely loaded or unloaded in a moment's time, the complete unit is easily towed by the average dump truck. The entire operation is a one-man job.

The photos below illustrate the simple manner of loading the T4 "Traxcavator" onto the MARTIN Model 222 Trailer. This rugged combination is being sold as a profit-making package by "Caterpillar" dealers everywhere.



Loading a T4 "Traxcavator" on a MARTIN Model 222 Trailer.



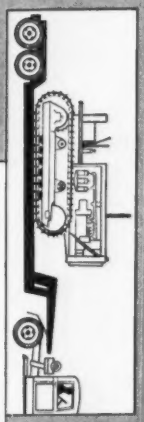
Loaded in a few moments, ready to go to the next job.

MARTIN

PRESENTS THE NEW

FOLDING GOOSENECK TRAILER

TO CARRY



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MARTIN CARRYHAUL TRAILERS

MARTIN MACHINE COMPANY

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Write for complete information and specifications on the new Martin FOLDING GOOSENECK TRAILER.

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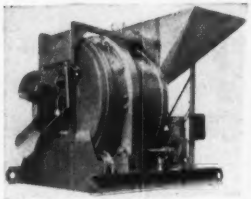

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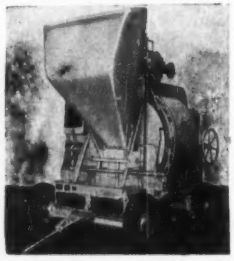

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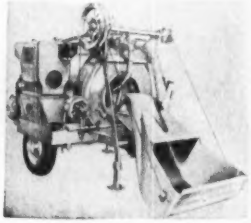

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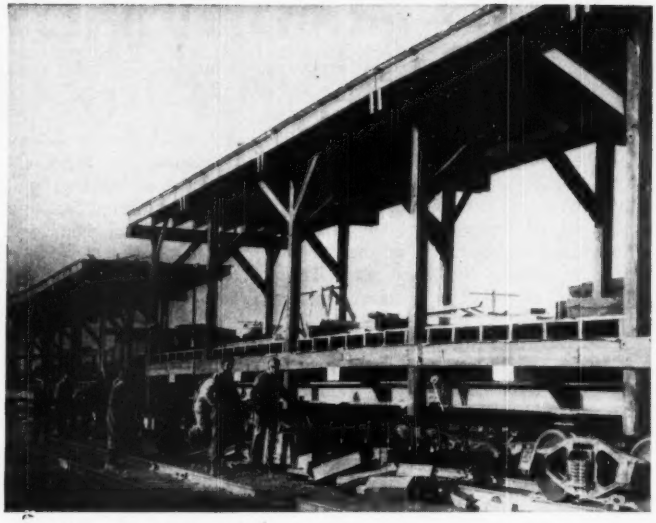
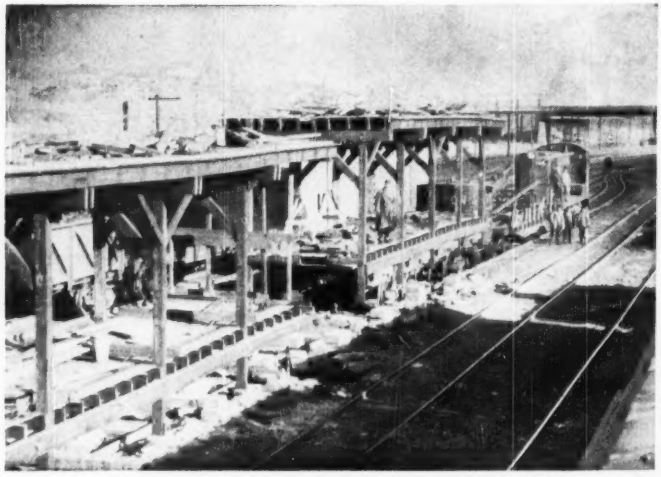


CUT INTO 56-FT LENGTHS 1,962-ft ice dock is moved across freight yard. Screw and ratchet jacks will pick up transverse timbers to lift sections for car removal and for lowering on to previously poured piers.



LAST SECTION OF DOCK is pushed to place by switcher. For others, light self-propelled crane took over at clearance point, moved car and dock sections to place down skeleton track.

Ice Dock Rolls to New Location

WHEN THE ROCK ISLAND LINES revamped their Armourdale (Kansas City, Kan.) freight yard, they moved the car-icing facilities from one side of the classification tracks to the other. Yet they made the shift without interfering with traffic or interrupting icing service.

The dock consists of 141 panels, each about 14 ft long, with a total length of 1,962 ft. Timber posts on individual concrete piers support the structure. Because of intervening tracks, the dock could not be moved sidewise to its new position without dislocating yard operations. Dismantling and re-

erecting it would have been excessively expensive. So the structure was separated at every fourth panel, and the 56-ft sections were moved intact on a flatcar. Sections for one-half the dock were moved and placed back in operation before the other half was tackled. Thus, cars could still be iced at all times.

To prepare for the move, an old track at the new location was shifted slightly to exact centerline of dock. All ties and fastenings were removed, except those necessary to carry a single car and a light rail crane for motive power. (Skeletonizing the track made later removal a cinch.) New concrete piers were poured.

Flatcar Moves Sections

Each old dock section, cut loose, was jacked up and shifted sidewise to be centered over an adjacent existing track. A special flatcar was then rolled beneath it to pick it up and move it to the new location. The car was a pair of standard trucks with two 50-ft H-beams welded on top of the bolsters. This kept car width to a minimum for better clearance.

Four ratchet chain jacks held the sections safely on the car while it was rolled to the skeleton track between the new piers. Here, the dock was jacked up and, with car removed, was simply lowered into position and anchored. Part of the dock has a lower deck for conveyors and body icing machines, which is additionally supported by a central line of piers. These were poured through the deck after the skeleton track was removed.

Modernization of the Armourdale yard was under the supervision of F. W. Thompson, chief engineer, and J. T. Fitzgerald, construction engineer. Ice-dock shifting was handled by the Rock Island's Bridge & Building forces under H. H. Alfrey, chief scale inspector, and T. J. Webster, master carpenter.

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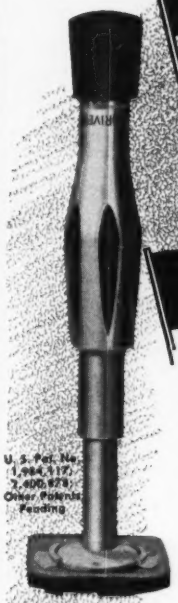

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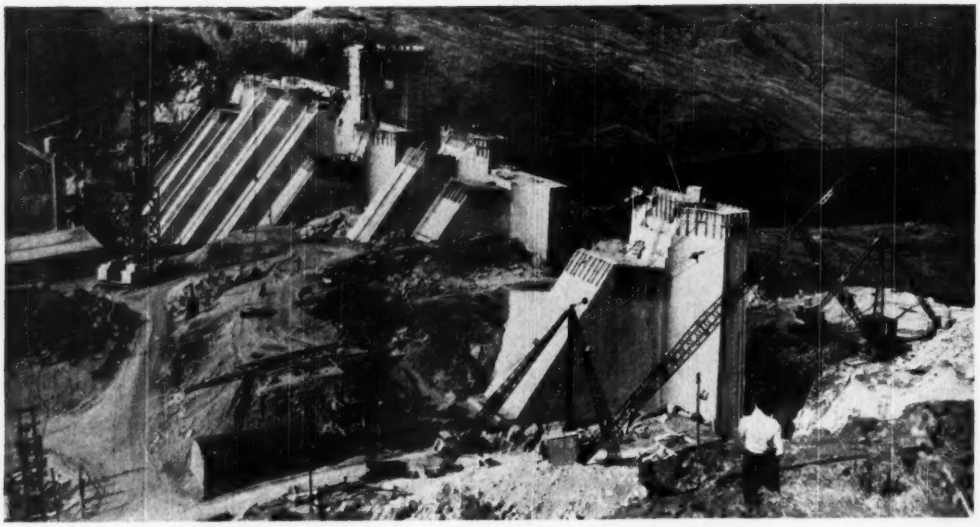
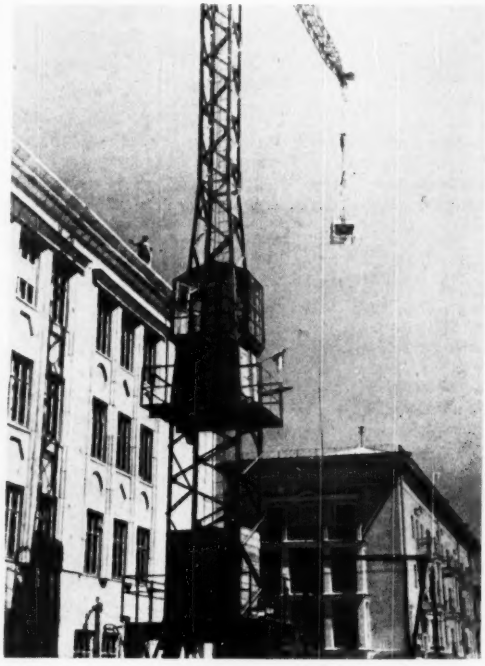
CONSTRUCTION 'ROUND THE WORLD...

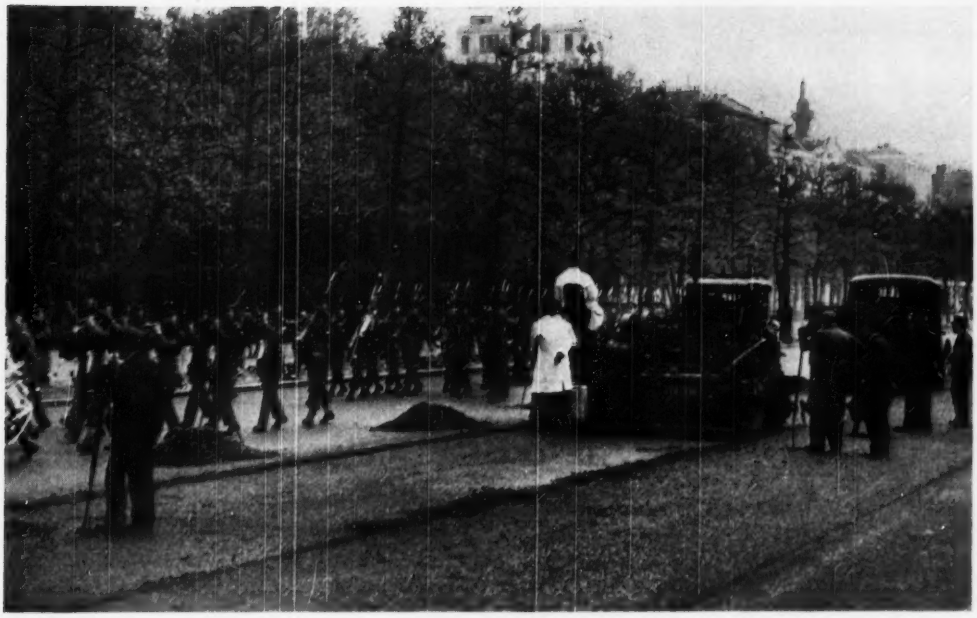


SCOTLAND—Bonny banks of Loch Lomond will soon benefit from power of Loch Sloy hydroelectric plant. Cables carry concrete buckets while conveyor belt 1½-mi long (upper left) brings in aggregates. Second largest dam in Britain, it is 1,160 ft long and 165 ft high. Water feeds into four vertical Francis turbo alternators, each with 32,500 kw output.

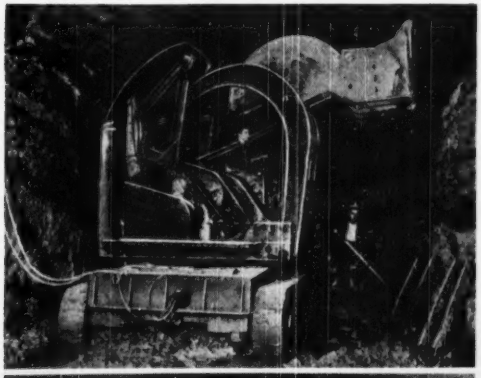
SWEDEN—This 85-ft. prestressed concrete pile with 12x12-in. cross-section is lifted into place with single suspension by double hook setup. Manufactured by A. B. Betongindustri, Stockholm, they have same bending stresses as regular 105-ft 18x18-in. piles.

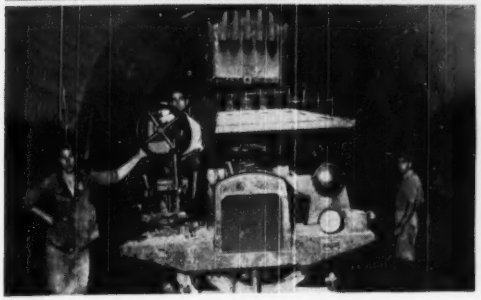


RUSSIA—Soviet version of hammerhead crane is swinging concrete hopper for pouring job on new school in Stalingrad. In recent years mechanization of construction industry has rapidly advanced. Note searchlight at tip of boom for night operations.

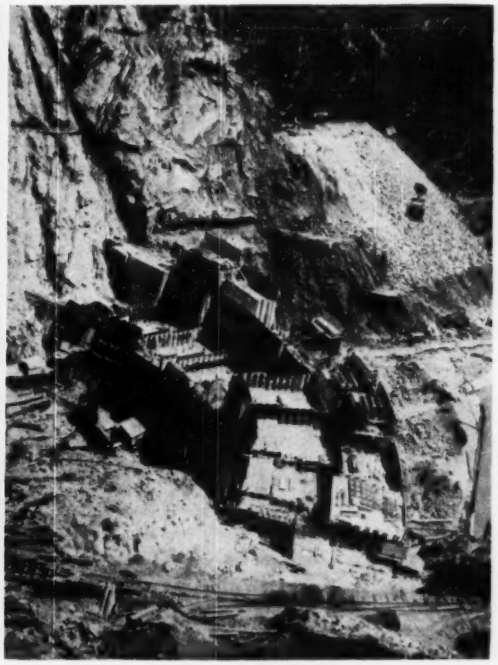


ENGLAND—Famous Mall is being reconditioned and a "red carpet" laid right up to Buckingham Palace with British-made Barber-Greene finisher. After removal of wood block surface, 3-in. base coat was laid, followed by 1-in. wearing surface with red granite and limestone dust filler. Precoated red pigmented granite chips are rolled into surface.





FRANCE—Main sewer in Lyon is hastened to completion by use of Pinguely electric shovel (top) operating in close quarters. Aveling-Barford shuttle dumper (bottom) is perfect mate. By swinging seat around, driver uses alternate pedals and steering wheel.



AUSTRIA—Scheduled for use this year is huge dam built with Marshall plan funds in Kaprun, U. S. zone. Picture shows it at half-height. At completion it will be 120 m. high and 324 m. long. Lake will impound 80 million cu m. of water annually.

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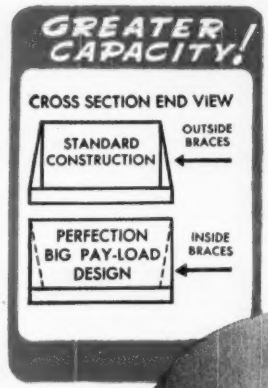
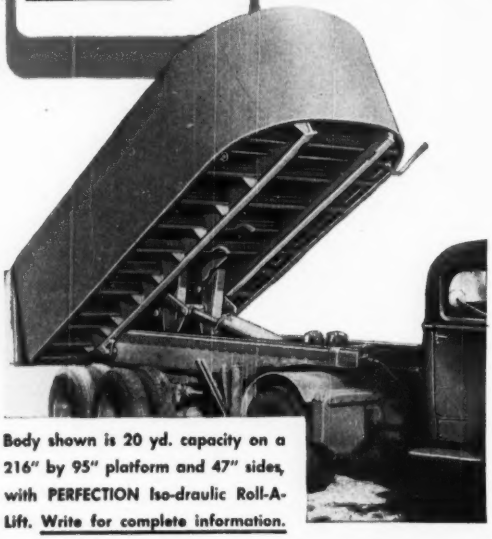
For instance, the design of the PERFECTION Body shown in photo offers you greatest possible capacity for any given overall dimensions. This advantage is achieved by placing the side braces INSIDE and making the sides flush with edges of platform. The result is a bigger pay-load volume capacity by approximately 1 ft. by length by height of one side. This PERFECTION design has another advantage in that it also permits the use of lower height sides for any given volume capacity requirement.





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PERFECTION STAKE and DUMP BODIES HYDRAULIC HOISTS — **FOR ANY TRUCK** STANDARD or SPECIAL UNITS IN ALL SIZES • FOR ANY USE

Good Maintenance

(Continued from page 53)

maintenance shop, staffed by three mechanics and a welder. By day, they put the trucks back into shape. The shop stocks $8,000 worth of parts, from transmissions to rear ends, and includes a maintenance pit 43 ft long that accommodates both truck and tractor. A specially rigged welding and repair truck, equipped with flood lights and a self-contained power supply, patrols the 3½-mi route, prepared for instant repair.

This roving welding repair truck was shop built on a 1½-ton Ford. It mounts a Le Roi air compressor; a pneumatic air wrench for tire changing; four flood lights—two of them 300 w, and two 750 w—powered by a Kohler light plant; a 200-amp GE portable welder; grinders and buffers, pipe and mechanic's vises.

To speed up travel on the steep grades of the dump, Atkinson stepped up the Hall-Scott 6-cyl, series 400, gas engines on the Peterbilt trucks from 1,800 to 2,000 rpm. Despite the usual manufacturer's warning to the contrary the rigs responded satisfactorily to the added burden, and were thus able to pull steep grades in higher gear. Gas consumption efficiency was necessarily sacrificed by this.

The engines are equipped with dual ignition; both series are used in normal operation. Mechanics check the ignition daily by switching from one set to the other, and if the engines fail to run smoothly on single ignition, a tuneup is indicated.

"Joe is afraid to go to the dentist."

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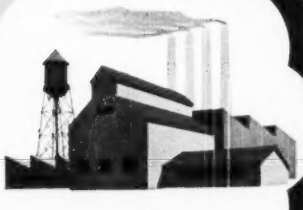

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SEE THOSE FAST STOPS AND STARTS? WITH HYDRAULIC CONTROL SHE'S SMOOTHER ALL AROUND
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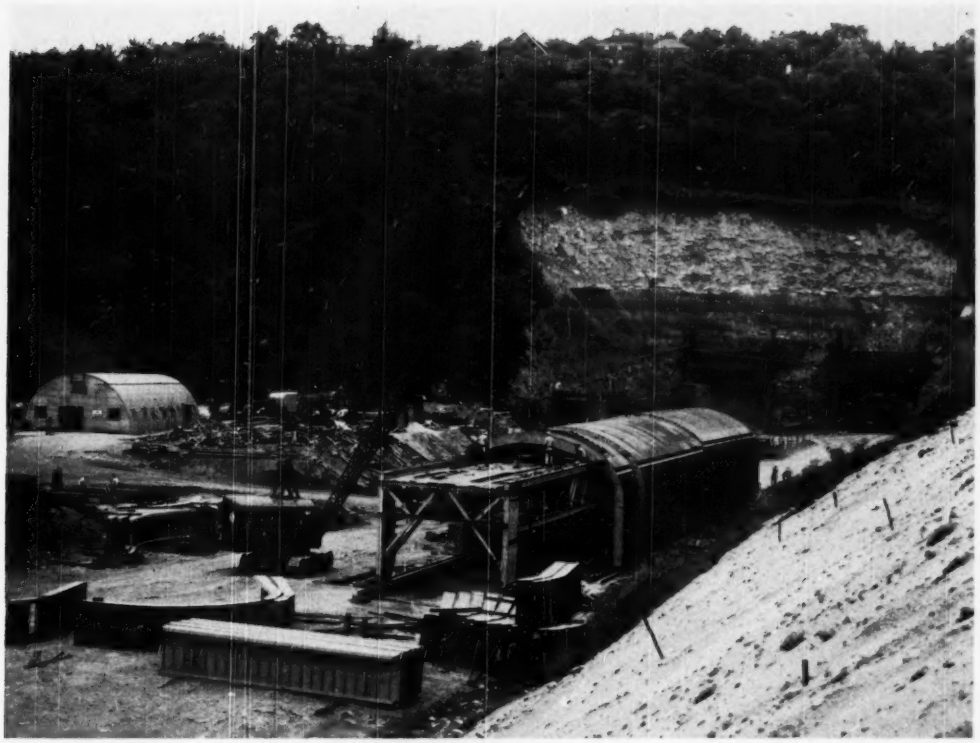


ALL-WELDED STEEL FORMS for concreting twin-tube Squirrel Hill Tunnel are assembled at east portal in three 50-ft. sections. Timber-decked, steel-frame traveler for handling forms in tunnels, serves as working platform during form-assembly. (Blaw-Knox photos)

Hinged Forms and Hydraulic Traveler Are Concreting Squirrel Hill Tunnel

CONCRETING THE LINING for the twin-tube Squirrel Hill Tunnel on the Penn-Lincoln Parkway in Pittsburgh, Pa., promises to be a good wintertime job for B. Perini & Sons, Inc., and associates, contractors on the project. Special steel forms, designed and fabricated by the Blaw-Knox Co. for continuous placement of the concrete tunnel walls and arched roof, were assembled at the east portal.

Concreting of the north tunnel was started at the east portal on Sept. 15, the same day that tunnel was officially holed through at the other end. Concreting schedules are set up for a 50-ft. pour of arch roof and sidewalls per day—working west through the north tunnel, then doubling back to line the south tunnel.

Squirrel Hill Tunnel will be 4,225 ft. from portal to portal, a small portion of which will be cut-and-cover. Two 90x90-ft. ventilating buildings, comprising the outer ends of the tunnels, will house the permanent ventilating fans, control panels, and tunnel service equipment.

The north rock bore is 3,785 ft. long and the south rock bore will be 3,895 ft., making 7,680 ft. of tunnel to be lined with concrete, using the special steel forms. The completed tunnels, spaced 60 ft. c. to c., will each carry a 24-ft. roadway and one 2 ft. 7½-in. service walk. A suspended concrete ceiling will give 14-ft. minimum headroom in the arch-type tunnels.

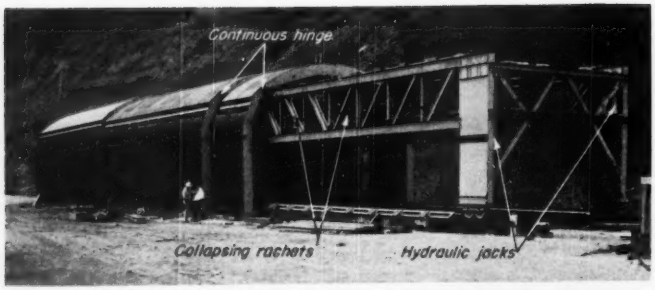
In addition to fabricating three 50-ft. sections of all-welded steel forms for placing the concrete lining, proper, Blaw-Knox also built a special traveler, or gantry, for moving the heavy forms.

Designed for Continuous Concreting

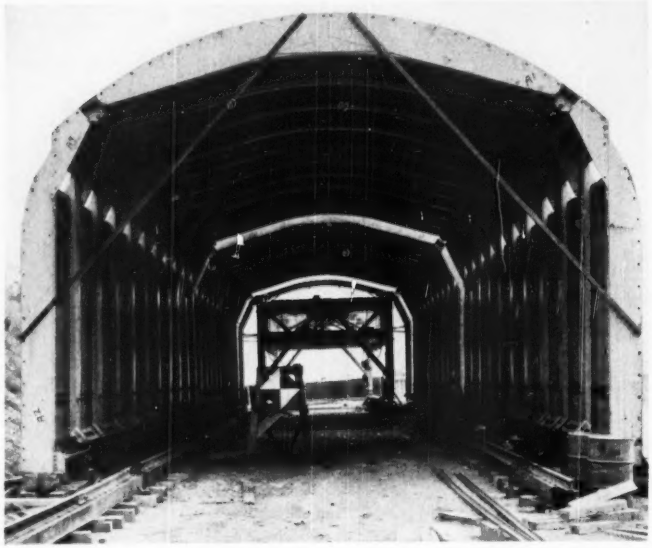
The tunnel lining forms are designed to permit placement of all wall and arched-roof concrete, in one continuous operation. At the same time, they will form a continuous horizontal keyway just above the springline of the roof to support the ceiling slab.

The three 50-ft. sections of tunnel-lining forms are identical. There are five lines of grout holes at 10-ft. centers—one line along each wall and three in the roof—for pneumatic placement of concrete through 2-in. grout pipe.

Six lines of 18x24-in. doors—two in the curved roof and four in the walls—allow for vibration and inspection of the concrete. These doors are spaced 5 ft. apart in the roof and 10 ft. apart in the walls. Three clean-out doors also are located about 20 ft. apart just above the wall footings. There are also



HINGED JOINTS in forms, plus collapsing ratchets to swing side forms in, and hydraulic jacks in corner posts of 50-ft. traveler to raise and lower forms permit each 50-ft. form section to be collapsed and moved forward through other two sections.



COMPLETED FORMS measure 29 ft. 4 in. wide and 20 ft. 10 in. high, while traveler rails are gaged 19 ft. Openings at top of sidewalls will be covered with special forms to make continuous keyway in tunnel lining for supporting horizontal ceiling slab. Inclined double-channel walers at bottom of side forms will engage screw anchor bolts embedded in previously poured wall footings, to keep wall forms from kicking in when placing daily 50-ft pour behind them. Walls are hinged above spring line for travel.

two lines of stripping jacks, at 5-ft. centers, about 3 ft. above the bottom of the wall forms to help break the bond between concrete and steel forms.

The forms are supported on previously placed concrete footers along each side of the tunnels. About 3 in. of steel wedges driven between top of footer and bottom of side forms at the inside base of each rib give final adjustment and transmit the weight of the forms on to the footings. These wedges also are necessary in freeing the forms. Two 1½-in. screw anchor bolts embedded at 45 deg. into the footer, at each form rib, prevent the wall forms from kicking in as the concrete is placed behind them.

Handling the forms in the tunnel is relatively simple. One 50-ft. section is anchored in position, bulkheaded at the ends, and 50 ft. of roof and walls are poured. After initial set of the concrete, the forward bulkhead is removed. The second section of forms is collapsed and moved through the first section and end-bolted to it. The front end of the second section is bulkheaded and a second 50-ft. of concrete lining is poured around the forms.

The third section of forms then is collapsed, moved through the other two, end bolted to the front section, bulkheaded, and a third 50-ft. length of roof and walls is poured.

By this time the first 50 ft. of lining has hardened, so the first section of forms is collapsed, moved through the other two and anchored in place on the footers for the next pour.

First operation in moving a section of forms forward is to remove the 45-deg. anchor bolts. Bottom wedges then are freed and the bond between concrete and steel is broken by the stripping jacks.

Wall forms are then swung inward at the bottom, by five collapsing ratchets mounted along each side of the traveler. The form ribs are hinged just above the springline to permit swinging the forms in.

Removal of the bottom wedges transfers the entire weight of the forms on to the traveler. Four sets of hydraulic jacks—one set in each corner post of the traveler—then lower them to pass through the other two 50-ft. sections of forms. After a form section has been moved ahead it is re-positioned on the concrete footers by reversing the collapsing and telescoping operations.

Special Ceiling Forms, too

The 6-in suspended concrete ceiling slab spanning 29 ft. 4 in between tunnel walls, 14 ft. above the tunnel roadway, also will be placed on three 50-ft. sections of special steel forms. They will be similar in operation to the wall and arch-roof forms, and will be moved forward through each other, by a second hydraulically-operated traveler on the 19-ft.-gage traveler rails.

Blaw-Knox engineers responsible for designing the special tunneling and ceiling forms and two travelers include: L. J. Sarosdy, chief engineer and J. D. Jessen, assistant chief engineer. Operation of the forms will be under the direction of Louis Capone, project manager for the contractors. E. D. Phinney is project engineer for the contractors, Attilio Soma, concrete superintendent, and R. E. Bradley, design engineer. G. E. Riley is resident engineer for the Pennsylvania Department of Highways.

WANT TO SEE YOUR NAME AND PICTURE IN PRINT?

See Announcement on page 83

Equipment of Hendrickson Brothers, Valley Stream, N. Y., moving earth to make way for a housing project at Great Neck, L. I. Among other recent big jobs of Hendrickson Brothers in that area is a $6,500,000 sewage disposal plant for Nassau County, N. Y.

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CONSTRUCTION EQUIPMENT NEWS • • *A Preview of*

By MELVIN DEAN, Equipment Editor

Self-Propelled, Self-Fed, Belt-Type Loader Handles 6 Yards of Material Per Minute at Speeds to 26.4 Mph

Machine is designed to pick up and load dirt, sod, gravel, oil-mix, surplus scarified material, snow, and other types of material which can be windrowed and which will pass up a conveyor belt. Revolving feeder—equipped with twelve curved and bevel-edge blades—moves material up a metal pan and places it on the revolving conveyor belt. Feeder is hinged and free to float to adapt to any size windrow. Rear section of conveyor is adjustable to provide a wide range of discharge heights. This allows discharge heights as low as possible to accommodate all trucks, resulting in better distribution in the truck bed without spillage, and dust is held to a minimum when dry material is handled. The TraveLoader is powered by an International tractor-type engine. Operating travel speeds range from 0.42 to 26.4 mph. Centrally located cab affords good visibility in all directions. (TraveLoader is shown re-establishing drainage on gravel road.)—**J. D. Adams Mfg. Co., Indianapolis, Ind.**

PORTABLE ELECTRIC WINCH—Compact drum-and-cable winch is available in six models and capacities with either single- or three-phase dual-voltage motors. The Stamco Tugger is powered to furnish a line pull of 500 to 1,500 lb. at speeds ranging from 55 to 220 fpm. Double-reduction spur gears convert the output of a high-torque repulsion induction motor to a constant speed-and-power ratio on the drum of the winch. Uses include: Operating draglines, truck winch for loading and unloading, power unit for materials elevators, operating conveyors, and as a roofers' hoist.—**St. Anthony Machine Products Co., 2424 E. Franklin Ave., Minneapolis 6, Minn.**

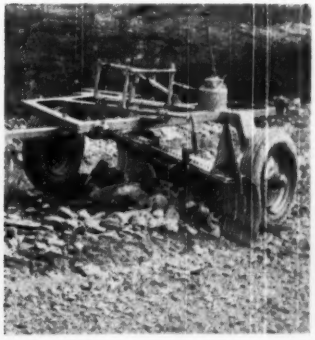
CLAMP FOR CURB-AND-GUTTER FORMS—Steel clamp permits curb-and-gutter construction using the advantages of steel-form design and the low cost of wood. The system is adjustable without requiring extra parts, for widths of top of curb from 4 to 8 in.; batter from vertical to an angle. The face or front form can be supported, without staking, at any height up to 24 in. Features include: Face form is removable without disturbing concrete; no stakes through gutter or slab; no wrenches or tools required; easy to set, adjust, and remove; and universail application.—**Pacific Engineering Sales Co., 215 W. 5th St., Los Angeles 13, Calif.**

HYDRAULIC ROCK BREAKER—Duncan Roc-Jak performs a quick, economical job in the demolition of rock, mass concrete, or cemented brick where the use of explosives or ball drop is prohibited or impractical. The Roc-Jak is 24 in. long, 3 in. in dia., and contains 10 machined piston openings. The pistons are tested to withstand 15,000 psi. The hydraulic pump has a capacity of 15,000 psi., and is equipped with 6 ft. of high-pressure hose. Roc-Jak develops a pressure of more than 150 tons in the hole causing a clean, shearing break at right angles to the point of thrust. Unit weighs 90 lb.—**Duncan Hydraulic Roc-Jak Co., 1350 Wright St., Los Angeles 15, Calif.**

New Machinery, Tools and Equipment That Will Help You on the Job

ADJUSTABLE - DISCHAGE MIXER—Combines the economical operation of a horizontal mixer with the versatility of a high-discharge unit. Discharge of the Rex Moto-Mixer can be set at a maximum height approximately equal to that of any high-discharge-type of mixer; or elevated to any intermediate point in the hoist range. This speeds placing of concrete by reducing spout manipulation. Other Rex features include: Chain drum drive, Manten-steel drum and blades, versatile spouting, enclosed water system, and non-clogging water nozzle. Fluid drive provides smooth operation; protection of engine, transmission, and final drive from shock loads; and permits drum to be stopped without the use of clutch.—**Chain Belt Co., 1664 W. Bruce St., Milwaukee 4, Wis.**

THREE-LEGGED TAMPER — Feature of the Triplex backfill tamper is the use of three tamping legs in place of the standard one. A safety feature is the fact that the tamper butts are held farther from the operator's feet. The Triplex has less than ½-in. vertical movement in operation, and requires 105 ft of 100-psi air. — **Gunderson-Taylor Machinery Co., Denver 4, Colo.**



DRAWN, RAKE ATTACHMENT — When towed by truck, tractor, or grader, the York rake attachment can be used to screen and distribute windrows left by graders during maintenance operations. Large stones and other material are quickly shunted to the side of the road, leaving a smooth driving surface. The rake has 51 teeth on the long head and 15 on the short head. Lift is hydraulically powered. Pole hitch is adjustable in height. Dimensions are: Weight, 1,160 lb; over-all length, 15 ft 4 in; working width, with rear section of rake extended, 9 ft 4 in; tread of wheels, 6 ft 3 in; and size of tires, 6:00x16, 4-ply.—**York Modern Corp., Dept. GG, Unadilla, N. Y.**

BANTAM-WEIGHT CRANES — The Jones line of bantam-weight cranes, manufactured by K & L Steelfounders & Engineers, Ltd., of England, is now available in the United States. Features of the Jones line of cranes include: Precision workmanship in their construction, low initial cost, and low cost of operation. The cranes will continue to be manufactured in England, and shipped to the United States without engine, boom, counterweight, or many other parts. These will be installed after arrival in the USA. Gasoline consumption is listed at from 1½ gal/day, up. Distribution is handled by—**Tractor & Equipment Co., 3515 W. 51st St., Chicago 32, Ill.**

MIDGET - SIZE TRACTOR AND 'DOZER — Light-duty gasoline-powered tractor has a combination scoop and bulldozer blade. All operations are controlled through a built-in hydraulic system. The scoop is 36 in. wide, 13 in. deep, and 12 in. high. Speed range of the Mighty Mouse is ½ to 6 mph, forward or reverse. Dimensions are: Width at treads, 36 in.; length, including yoke and scoop, 77 in.; height at hydraulic ram, 29 in.; width of treads, 7 in.; bearing area on ground, 532 psi; drawbar pull, 800 lb; and weight, 800 lb. Power unit is rated at 5 hp. Tractor turns in an 8-ft. circle.—**Mead Specialties Co., Dept. MM-36, 4114 N. Knox Ave., Chicago 41, Ill.**

CHAMPION of

Contractors and Operators throughout the Country Proclaim the New TD-24 CHAMPION of Crawlers

The International TD-24 has proved itself CHAMPION of Crawlers. On job after job, the new TD-24 has won the admiration of operators for the ease with which it does work which other tractors cannot do. Contractor-owners are equally enthusiastic, for they see the TD-24 outworking and out-producing every other tractor in the field.

Greater power, and the weight and traction to match, plus new operator convenience and ease of control, give the TD-24 much more than an edge over any other tractor you might name.

Experienced operators and owners have this to say about the new TD-24: (names on request)

"In my estimation the TD-24 is the heavyweight champion of crawler tractors."

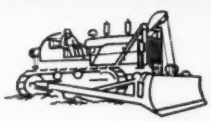
"The TD-24 works right along on slopes so steep we have to cut them down before other tractors can even navigate unloaded. TD-24's are fast tractors, easy to shift and have plenty of power. This combination really moves dirt . . . made us more money than any other tractor could."

"The TD-24 is a wonderful piece of machinery and I can't say enough for it. Our operators feel they are wasting their time when they run other tractors, for no other tractor built can compare with the work these TD-24's can do."

Visit your International Industrial Power Distributor and see what the TD-24 can do for you. You'll agree it's the CHAMPION of Crawlers—the one tractor you can't afford to be without, for profitable earthmoving.

INTERNATIONAL HARVESTER COMPANY
Chicago

JOB FOREMAN REPORTS SAVINGS
"It (the TD-24) is definitely outhauling every other tractor on the job," says the foreman on this 247,000-yard stadium bowl job in Maryland. "It will do so much work that we are sure our job costs will show a great saving."



Crawlers

"Worth Two of Any Other Heavy Tractor," says Lindsey Belville, president of Greasy Ridge Coal Co., Greasy Ridge, Ohio, strip mine. "This is the best tractor I've ever used in my five years experience," says Warren Bare, the tractor operator shown working it in heavy rock. "It is the only one that will do everything I want it to," he claims.

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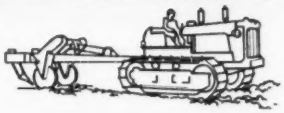

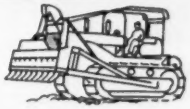

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• You can't find a pile driving job too big for Super-Vulcan. This powerful pile hammer is rugged, durable, simple in design, easy to operate . . . built to meet the requirements of experienced contractors. Its dependability, speed and endurance are tested daily on tough jobs all over the world. It drives wood, concrete or pipe piles, steel sheeting or H beams. It fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

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TRAILER HAS BUILT-IN RAMP—Ramp section on the Model LDR trailer is quickly swung into position for loading or unloading operations. The ramp's 20-deg slope provides a wide margin of safety to prevent overturning of cranes or other large equipment. Wheel clearance under the one-piece gooseneck permits turning tractor at 90-deg to the trailer. The king-pin plate accommodates any fifth wheel up to 36 in. The LDR is made in three sizes with capacities of 10, 12, and 15 tons. All have a length of 26 ft, and 96-in-wide platform.—**Howard H. Samuel, Inc., Hackettstown, N. J.**

LIGHTWEIGHT PIPE CUTTER — Sixteen-pound cutter is simple in operation—drop on to the pipe, snap one point together, and pipe is being cut. Features use of a large number of turning handles so that one is always reached without bending, straining, or changing positions. With the Model 4, damaged ends may be cut as close as ¼ in without

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LUCEY 104 H.P. 150 and 250 lb. W.P.
Skid mounted with 24" oil burning base.

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1. 1040 sq. ft. heating surface.
2. 160 cu. ft. furnace volume.
3. Ample steam volume 54 cubic feet.
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6. Four-inch water space around firebox.
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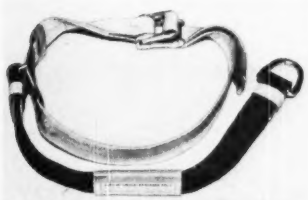
Look for These Next Month

- *Crawler-mounted excavator* features interchangeable component assembly of the turntable. It has a ¾-yd capacity as a power shovel.
- *Crushing and screening plant* is a double-duty unit, producing crushed stone, aglime, or a percentage of both in one operation.
- *Three-bottom tractor* has remote-control operation, permitting one man to operate tractor and drawn attachments.
- *Wall Ties* for masonry-veneered walls are crimped to increase secure anchorage. Thick copper covering prevents rusting.
- *Whiteprinting machine* produces ammonia-vapor prints at speeds up to 32 fpm.
- *Ladder equalizer* automatically maintains ladders in correct, upright position regardless of the elevation of individual legs.
- *Steam-cleaning unit* is designed for heavy-duty cleaning jobs, and for heat-transfer uses.

weaving or traveling. Operates above or below ground. Can cut through asbestos-cement and clay pipe in a range from 3½ through 15 in (OD), depending on the adapter used. Pilot also manufactures a machining tool for use on pressure pipe, and a tool for tapering and straight machining of Transite pipe.—**Pilot Mfg. Co., 420 Market St., San Francisco 11, Calif.**



SHOCK-ABSORBING SAFETY BELT — Safety-belt has a shock-absorber extension made of Unolyn. Unolyn is a member of the nylon family of chemical compounds and is said to be capable of elongating—without rebound—to several times its original length. Safe-Hi belt permits use of steel-cable lifelines because in case of falling, the deceleration period is stretched out, holding impact to a minimum. Draw load and length of the Unolyn extension have been scientifically determined to provide full deceleration within a few feet to minimize hazard of man striking a girder or any projection before he is fully stopped. — **The Rose Mfg. Co., 1731 Arapahoe St., Denver 2, Colo.**

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How would *your* firm stand in a case like this? Probably you have enough fire insurance to cover the *property* damage. But how about the equally important *income* loss during the period of the shutdown?

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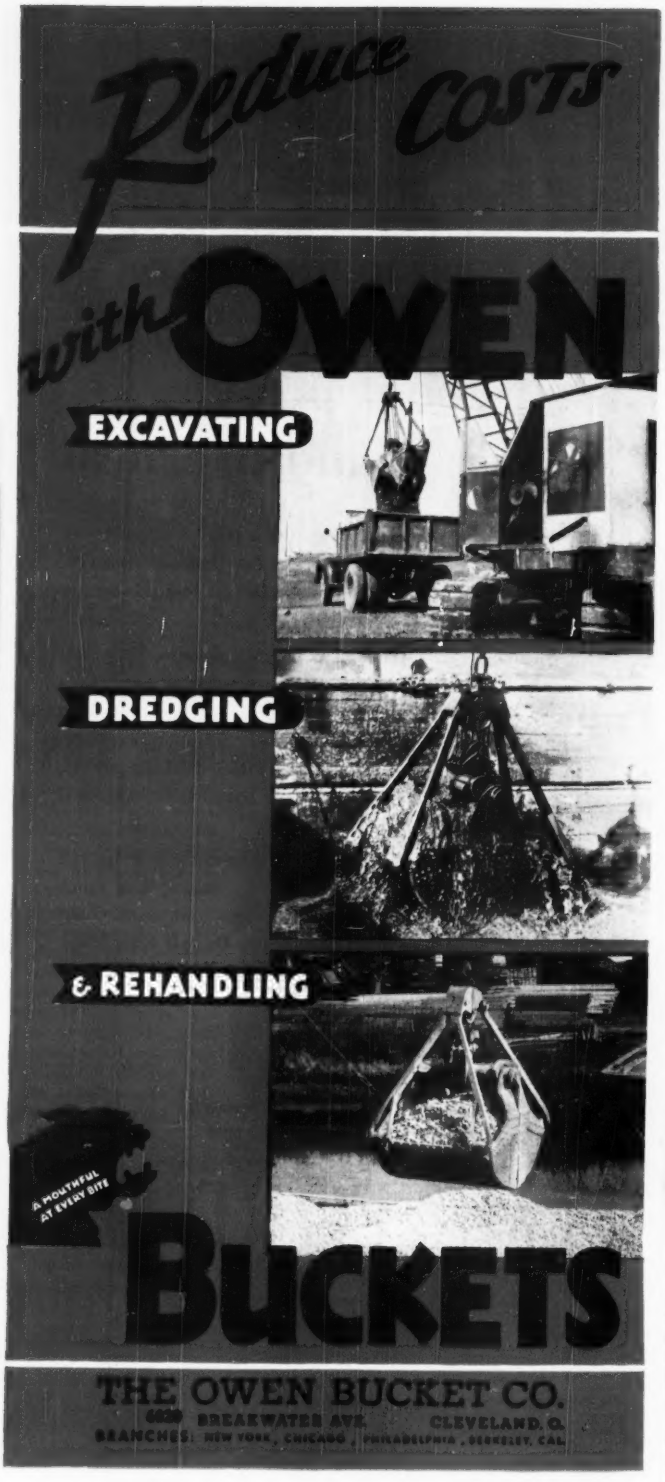
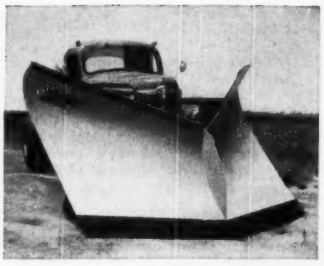
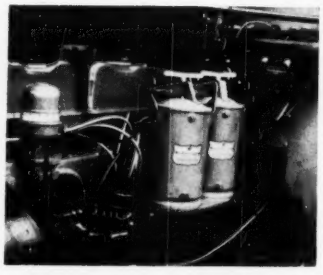




TRUCK-MOUNTED SNOW PLOW—V-type blade snow plow is especially designed for breaking through deep snow and widening high drifts. It has all-welded construction, alloy-steel moldboards for increased strength and reduced weight, and smooth-rolled moldboards for fast discharge and minimum resistance. It is made in V, one-way rigid, one-way trip and reversible models for all trucks from ½- to 5-ton capacity. **—Jarp Corp., Wausau, Wis.**

DRILLS FOR MASONRY—Cutting angles, scientifically ground for fast drilling, are the feature of the Badger drill designed for cutting holes in brick, concrete, tile, stone, and similar materials. The Badger fits all standard electric or rotary air tools and permits drilling in glazed surfaces without breaking the polished surface. Chuck can be used as a stop gage by regulating the length of the drill. Unit features removable, sinterred carbide blades. Available in all sizes from ⅛-in. up. **—A. E. Kliebhan & Sons, 2261 N. 63rd St., Wauwatosa 13, Wis.**



LINELESS OIL CLARIFIER—Replacement clarifier can be installed on the job on any single or multiple oil filter base using a standard W. G. B. T-108 replacement oil filter cartridge. Is said to result in 45% better oil filtration, and in the cartridge remaining efficient one-third longer. Cartridge can be changed without tools. Models are available for trucks, tractors, or other equipment equipped with base-mounted oil filters.**—W. B. G. Oil Clarifier, Inc., Kingston, N. Y.**

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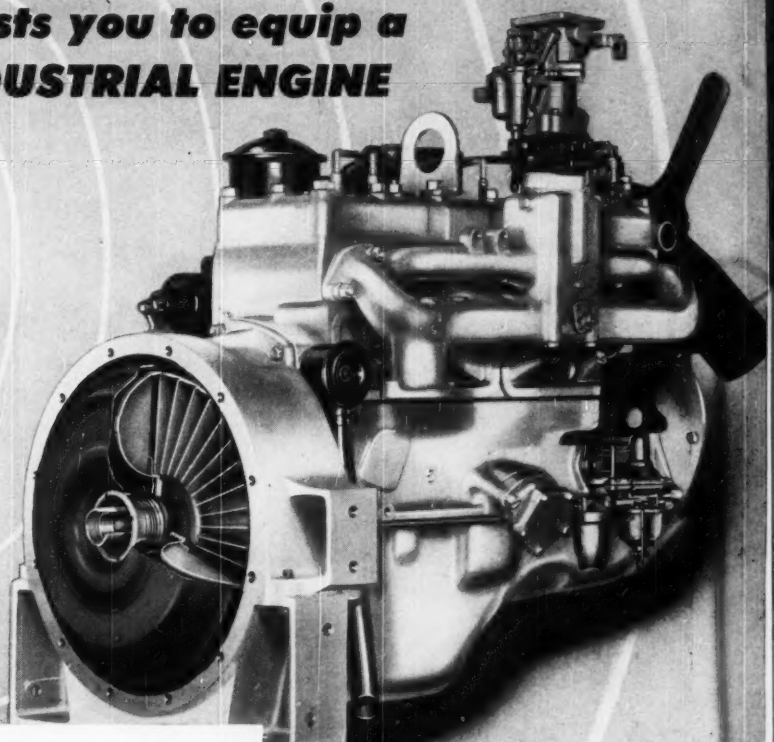
gýrol Fluid Drive!



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Is your equipment subjected to damaging shock loads? Is it desirable to speed up your engine close to torque peak with the output shaft turning at a lower speed?

Do shock loads sometimes stall your engine or cause failure of drive train parts? Would gradual oil-smooth acceleration improve your operation?

If your answer is "yes" to any of these questions, better investigate Chrysler Industrial Engines now! With gýrol Fluid Coupling, Chrysler Industrial Engines bring *scores* of new advantages to the operation of power equipment.

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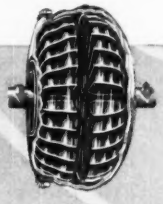
HORSEPOWER WITH A PEDIGREE



As the driver turns inside the sealed steel drum, the confined oil produces a powerful swirling out-thrust. Instantly the Runner receives the impulsion and transmits smooth power to the load.

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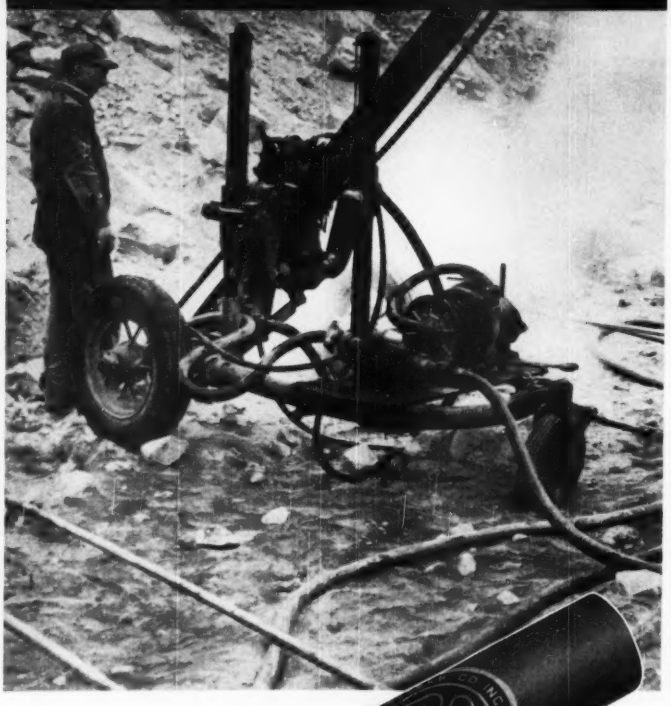

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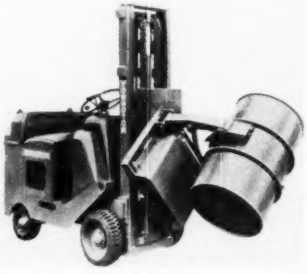
CROSSHEAD GUIDE FOR PUMPS—Assembly for use on the Carter line of plunger sludge pumps results in increased pumping efficiency and cuts maintenance down time. Main advantages of this design modification are to eliminate misalignment of the plunger and any tendency toward eccentric motion of the plunger in the vertical path; reduces possibility of excessive wear on the packing gland as well as wear on the plunger and cylinder. — **Ralph B. Carter Co., 192 Atlantic St., Hackensack, N. J.**



REVOLVING BARREL GRAB—Hydraulically controlled grab is designed to lift and transport open-end drums and to discharge their contents. Carriage permits the container to be completely revolved in either direction. The barrel grab has a lifting capacity of 2,100 lb., and will hold cylindrical objects from 15 to 30 in. in dia.—**Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.**

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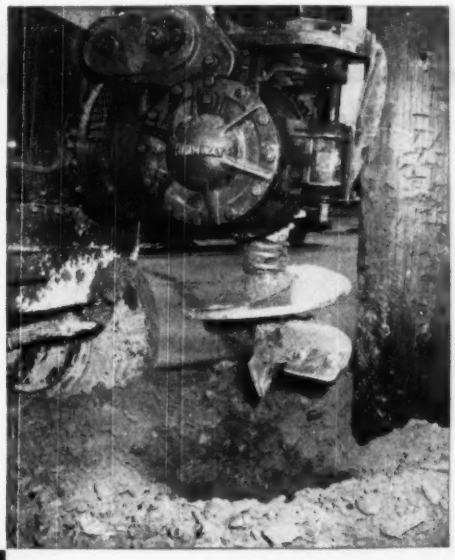

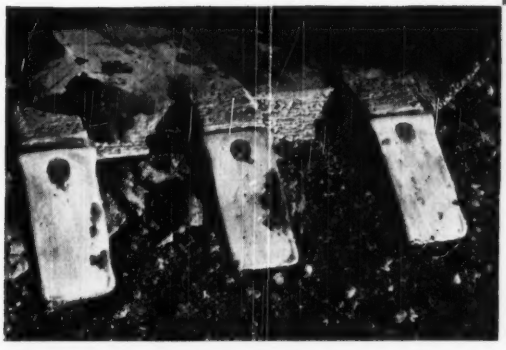

Post Hole Digger now digs 206 holes in rocky soil before repointing

Just 4 holes was the former life of a new point and blade on this power-driven post hole digger. After hardfacing with AMSCO Tube Tungsite, the same blade and point dug 206 holes—*51 times the former service!*

Here's another example of big savings with AMSCO Hardfacing . . .

Lips and teeth of this dipper were given far greater resistance to impact and abrasion with AMSCO Economy Hardface . . . resulting in longer dipper life, lower handling costs per ton.

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Velvetouch ALL-METAL STEERING CLUTCH FACINGS ON THE NEW HD-19

Velvetouch cone clutch linings for power control units. Steering clutch disc for HD-19.

Like other leading manufacturers of heavy duty tractors and earthmoving equipment, Allis-Chalmers specifies Velvetouch for dependable power control. Because the powdered metals, used in making Velvetouch clutch facings and brake linings, are scientifically processed to minimize chattering and slipping . . . insure smooth, positive action. Genuine Velvetouch lasts longer, too . . . for it's *all-metal* . . . can't rot in oil or "burn" like conventional material. Send for descriptive literature today.

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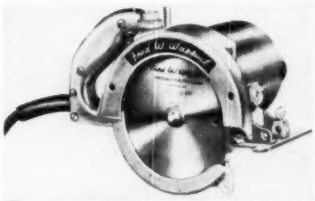
8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

ELECTRIC POWER UNITS—Two new power units can be used to drive all types of tools—polishers, routers, brushes, grinders, buffers, drills, files, etc. Jiffy tool is a three-caster floor model delivering ¼ hp. at 1,700 rpm. through a 5-ft. flexible shaft. Both 1/3- and ½ hp. units are available. The other unit, the Speed Jiffy, features three speed variations of 1,000, 1,750, and 3,000 rpm.—for more complex operations. These velocities are obtained by altering the plug-in position of the flexible drive shaft. Features an automatic tensioning belt.—**Stow Mfg. Co., Binghamton, N. Y.**

CARBURETOR PREHEATER—Preheater unit is designed to increase atomization of gasoline, and to provide immediate combustion and rapid starting in temperatures as cold as 30 deg. below zero. Unit is installed between carburetor and intake manifold with wires attaching to battery line and a dashboard switch. Quick-Start preheater draws approximately 10 amp.—**Kemode Mfg. Co., Inc., 161 W. 18th St., New York, N. Y.**



LIGHTWEIGHT HAND SAW—The Maxaw lightweight electric hand saw has a 6⅜-in. blade and cuts to a full 2-in. depth on square cuts, and 2-in. dressed lumber at a 45-deg. angle. Depth adjustment, built in as an integral part of the saw, is from 3/16 to 2 in. Bevel adjustment is from 0 to 45 deg. Trigger-type switch may be locked when necessary. Weight of the Maxaw is 10 lb.—**Fred W. Wappat, Inc., Mayville, N. Y.**

Move more yardage today with the Scraper of tomorrow!

WOOLDRIDGE Model TC-142

14.2 cu. yds. struck, 17.5 cu. yds. heaped

BETTER!

PROVED!

PROFITS!

Even faster loading is achieved by instant penetration of new 3-piece cutting edge. WIDER 65-inch apron opening and new curved ejector allow faster complete discharge of load. The rugged new TC-142 is built to "take" the heavier stresses imposed by today's more powerful tractors. Modern formed steel construction minimizes welding, increases structural strength. Higher yoke and ground clearance make maneuvering easy.

Proved Wooldridge advantages have been maintained. Original boiling bowl loading permits heaping volumes to surge freely into bowl. Pivot-tilt forced ejection dumps load faster with less cable strain. Rear-draft fulcrum leverage insures positive blade penetration. Cable is easily accessible, simply reeved over minimum of sheaves, all located away from load.

Job-proved, clean-lined, this IS the scraper of tomorrow—for greater production—for minimum operating cost—for highest profits TODAY! Contact your dealer or write for Bulletin TC-202 now for details. Other Wooldridge Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.

TERRA COBRA high-speed self-propelled earthmovers.
14.0 cu. yds. struck.
17.5 heaped.

RIPPERS

BULLDOZERS

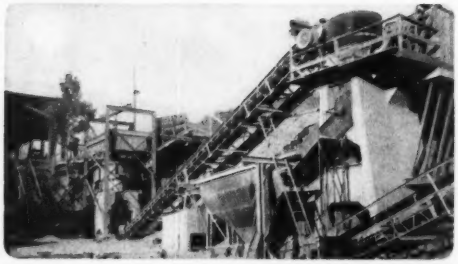
POWER CONTROL UNITS

WOOLDRIDGE MANUFACTURING CO.
Sunnyvale, California, U. S. A.

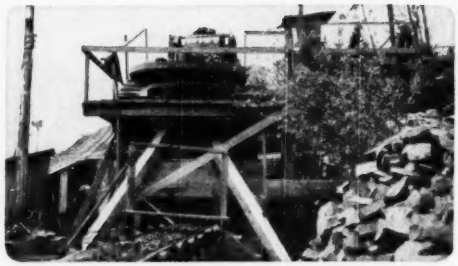
WOOLDRIDGE EARTH MOVING EQUIPMENT

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

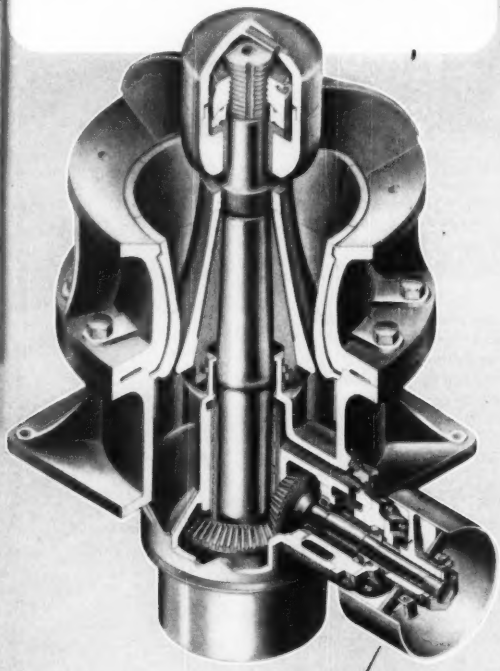
Job-Produced Aggregate Costs Less . . .



The cost of aggregate used on large construction projects can be reduced by producing it on the job with a Traylor TY Reduction Crusher. This rugged machine is unrivalled for simplicity of design and trouble-free operation. With a bare minimum of maintenance, it assures a *steady* flow of a *uniform* product, remarkably free from slabs and fines.



A TRAYLOR TY's great working range offers greater "job-flexibility" than several less adjustable machines. With a Traylor TY on the job you are sure of having the *right* product at the *right* time . . . in the *right* amount. Plan now to cut aggregate costs and increase profits on your next job with a Traylor TY Reduction Crusher.



When Traylor Curved Concaves and Bell Heads are on the job

power is used efficiently as a direct crushing force. Curved crushing surfaces check lifting and churning of material . . . reduce power loss and excessive waste fines. The increased capacity of each succeeding zone in the crushing chamber eliminates choking and packing . . . assures continuous, trouble-free production to keep pace with the tightest schedule. Write for bulletin 5112 for more complete details on a Traylor TY Reduction Crusher.

TRAYLOR ENGINEERING & MANUFACTURING CO.
119 Mill St., Allentown, Pa.

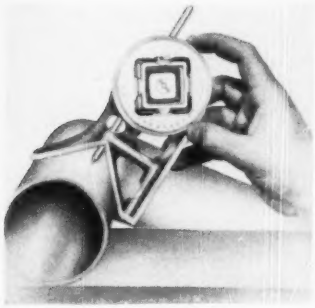
Sales Offices: New York, N.Y., Chicago, Ill., Los Angeles, Calif.
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

Traylor

Rotary Kilns, Coolers and Dryers
Grinding Mills · Crushing Rolls
Jaw, Reduction and Gyratory Crushers

A "TRAYLOR" LEADS TO GREATER PROFITS

MEMBRANE CURING COMPOUNDS — Membrane compounds, applied by spraying, are designed to form an impervious film which seals in mixing water for proper curing of concrete surfaces. Permite V-167 is recommended for all horizontal concrete surfaces, and for vertical surfaces below ground. Permite V-169 is recommended for all vertical concrete surfaces where non-discoloration is an important factor. Permite compounds dry to touch in 30 to 60 min. Coverage for horizontal surfaces is 200 sq ft/gal.—**Aluminum Industries, Inc., 2438 Beekman St., Cincinnati 25, Ohio.**



CENTER FINDER FOR ROUND PIPE—Compact tool accurately locates the center of circular pipes. The Model PF has a revolving dial with four levels marked in both degrees and inches per ft. It weighs 6 oz, and measures 6x4x1¼ in. The center punch has a hardened point and will punch milled steel. The frame is a magnesium casting; all other parts are brass or stainless steel.—**Interstate Sales Co., 123 E. 18th St., New York 3, N. Y.**

BURNOUT-PROOF GENERATOR—One-piece permanent-magnet rotor coupled with special electrical characteristics is said to result in a burnout-proof generator. Rotor is the only moving part—brushes, slips, rings, and commutator are eliminated. Stator is wound with 5/16-in copper, silver-soldered at the joints. Armature winding will carry three times normal rated output of the generator. Because the armature is stationary and the rotor is a permanent magnet, the generator is nonsparking. Transformer assembly provides required voltage variations. Unit is gasoline powered.—**Midwestern Engine & Equipment Co., 105 N. Boulder, Tulsa, Okla.**

CORRECTION—The November issue of CONSTRUCTION METHODS AND EQUIPMENT stated that the Corrulux translucent building panels would withstand a temperature range from 20 to 250 deg F. This should have read, from 20 deg below zero to 250 deg above.

DELIVERING WET CONCRETE
direct from mixer truck to second floor pouring operation with a gas engine driven Farquhar Trough Conveyor saves time and money for the contractor . . . hard, back-breaking work for men.

Get *MORE* work done . . . in *LESS* time . . . at *LESS* cost with FARQUHAR TROUGH CONVEYORS

A Farquhar Trough Conveyor takes the place of several men . . . speeds up all materials handling . . . releases manpower from handling jobs to do more *actual construction work!* Contractors everywhere are saving *time, money, labor* with Farquhar Conveyors, moving wet concrete directly from mixer to work area without loss due to repeated handling. Farquhar Conveyors help you speed up your construction jobs . . . eliminate profit losses due to behind-schedule work!

For *All* Handling Jobs . . . in *All* Industries

All through industry you'll find Farquhar Conveyors saving time, money and manpower . . . handling sharp and abrasive materials with the same ease and efficiency as fine, powdery substances . . . and doing it *faster, better, cheaper!* Contractors, chemical plants, warehouses, department stores, *all* industries, turn to Farquhar for answers to their specific materials handling problems. Farquhar offers you a complete line of conveyors for portable, semi-permanent, or permanent use, to handle any and all kinds of loose or packaged materials, speed up handling operations, cut labor costs! Send for information *now* on the Farquhar Conveyor that can *save you money!*

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these 12 square inches can mean a vital difference of 20 cubic feet

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GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
NRMCA
4 1/4 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY No. D 3948

Every architect, engineer and contractor knows that a concrete mixer drum must provide elbow room for the materials to mix properly.

Concrete authorities have accurately determined the proportions of such *free mixing space* needed in truck mixers and agitators to insure high strength, quality concrete.

Your eye cannot detect that a machine which claims 3 cubic yards capacity as a truck mixer actually has 20 cubic feet less than the minimum requirement for good mixing—***but it can always see that such a non-standard truck mixer never bears this rating plate.***

Look for this rating plate on the truck mixers that supply your jobs. It guarantees that the supplier is maintaining these quality standards on which the $250,000,000 ready-mixed concrete industry has been built.

The Bureau rating plate is available to any manufacturer who meets its quality standards and requirements

Affiliated with The National Ready Mixed Concrete Association

Truck Mixer Manufacturers Bureau

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CHAIN BELT COMPANY
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CONCRETE TRANSPORT MIXER CO.
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THE JAEGER MACHINE COMPANY
Columbus, Ohio
WORTHINGTON PUMP & MACHINERY CORP.
Dunellen, N. J.
THE T. L. SMITH COMPANY
Milwaukee, Wis.

YOU CAN TAKE IT WITH YOU

Any time you build a road just to transport sand, stone or other materials from quarry or dock to the job, you are making an unnecessary, expensive investment. Not only is it expensive—but once the job is done, you can't take it with you.

There's another kind of highway—a better kind of highway. It's a Hewitt-Robins belt conveyor system, like the one in the picture . . . the longest "roller coaster" in the world. Over seven hilly miles it stretches (here it parallels an old roadway) to move the 4,000,000 tons of limestone needed to build Arkansas' great Bull Shoals dam.

There are many advantages in belt conveyors like these, especially in rough country. There are no roads to build and maintain. No tracks to be laid. Grades can be mastered. Rivers, roads and valleys can be bridged. And when tunnels are inevitable, you bore a hole, not a truck-size shaft.

Best of all, when the job is completed, you can—and do—take it with you!

Hewitt-Robins builds belt conveyor systems for moving bulk materials of every kind, above and below ground. They range from standard sectional conveyors for average and above-average needs, to multi-mile installations like Bull Shoals.

Hewitt-Robins is the only organization equipped to handle the entire job . . . engineering, conveyor machinery and belting—to take single, unified responsibility for a successful Belt Conveyor installation.

It will pay you to consider belt transportation on your next job. Let us go over facts *and figures* with you. Inquiries will receive prompt, experienced attention. Write Robins Conveyors Division, Passaic, N. J.

HEWITT-ROBINS

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HEWITT-ROBINS (HR) INCORPORATED

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Advanced *TILT-DECKS* by ROGERS

Featuring HYDRAULIC CUSHIONING OF DECK

CAPACITIES

5 TON

7 TON

9 TON

11 TON

14 TON

Through repeated satisfactory experiences users have come to expect greater value in Rogers trailers; and they get it assuredly in these new tilt deck models.

They embody extra strength — easier loading — improved haulability and absolutely reliable braking.

But the new feature appreciated by all, is the hydraulic ram which controls and cushions the deck movement when loading or unloading heavy equipment.

There are sizes for all needs in three types — two wheel on a single axle — four wheel on tandem axles — and four dual tire wheels on tandem axles.

Write for literature and learn how these trailers can effect savings in hauling many kinds of equipment — faster and more economically.

ROGERS TRAILERS

EXPERIENCE builds 'em — PERFORMANCE sells 'em

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Non-Leak • Easy Pouring

Press formed trays, doubled folded corners with three thicknesses make JACKMANCO barrows leak proof. Capacity 5 cu. ft. Your local dealer has them in all steel, steel and wood, pneumatic tires, with plain or roller bearings or steel wheels.

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Superior Products Since 1876

MODEL M11-24B

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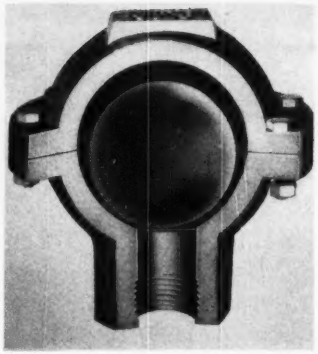
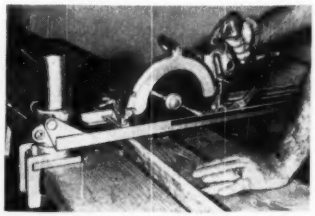


PIPE-LINE SHOCK ABSORBER—These liquid shock absorbers are designed to eliminate shock and hammering in pipe lines and liquid systems. They are available in five models, and have no moving metal parts. A rubber cushion, encased in a spherical metal chamber, absorbs the shock. This cushion pulsates constantly according to the increase or decrease of pressure in the system. Can be installed in any position.—**R-S Products Corp., Wayne Junction, Philadelphia 44, Pa.**

CLUTCH COUPLING—Designed to accommodate any shaft from ¾- to 1¾-in. dia. (in 1/16-in. increments) with standard keys, the Rawson clutch coupling is adjustable on the job. These couplings are complete packaged units ready for use with motors from 0.43 hp. at 580 rpm. to 25.6 hp. at 1,800 rpm. Coupling consists of two sections—a motor half and a driven half. Split taper bushing wedges the tapered coupling hub tightly to the shaft, always assuring a perfect fit to the shaft.—**Centric Clutch Co., 22-26 South Ave. W., Cranford, N. J.**



GUIDE FOR PORTABLE SAWS—Quickly converts any portable electric saw into a precision radial arm saw. The Capehart Saw Guide can be set up wherever two saw horses (or similar trestles) are available. Specifications are: Maximum travel of saw, 21 in.; angle of cut, up to 180 deg.; net weight, 26 lb. Permits saw to make all types of cuts—crosscuts, bevel cross cuts, mitres, bevel mitres, rip, bevel rip, dado, rabbets, etc.—**Packard Mfg. Corp., Noble at Market, Indianapolis 2, Ind.**

want to lift 22,450 lbs. with 90 ft. boom at 20 ft. radius?

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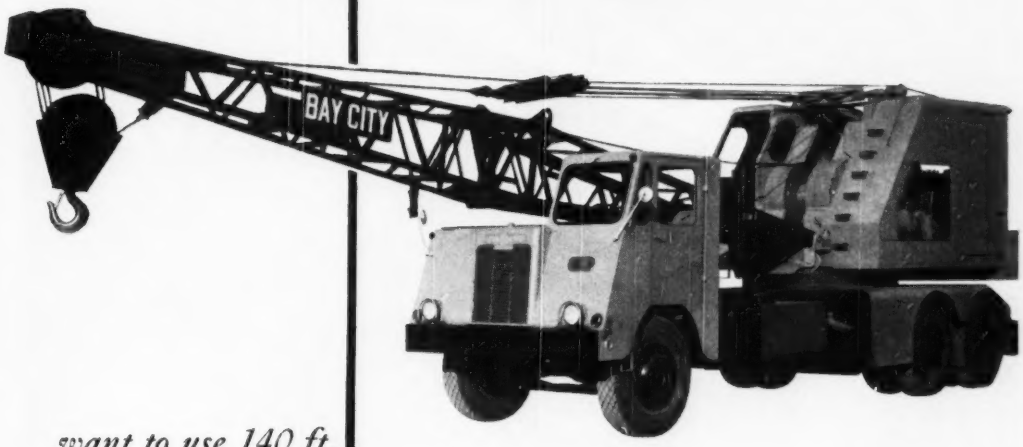

want to use 140 ft. boom and jib?

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want to set a 25 ton load gently and with accuracy?

YOU NEED A BAY CITY 190

CRANEMOBILE

Yes, with the 25 ton capacity 190 CraneMobile you get the answers to these questions, plus greater flexibility and mobility backed by bigger power units, easier operation and higher performance. We would like to tell you more about these fast reliable CraneMobiles, available in capacities from 7½ to 25 tons. Write us today.
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A new, high quality-level compounded oil recommended for heavy-duty diesel or gasoline engines in normal to difficult service. (Meets U. S. Army Specification 2-104B.)

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Companion product to RPM DELO Heavy Duty Lubricating Oil. Has higher viscosity index for special operating conditions. (Also meets U. S. Army Specification 2-104B.)

RPM DELO Supercharged—1 Lubricating Oil
An entirely new product of higher quality-level than the products above. Fortified with new, more powerful compounding. Recommended for severe and abnormal engine service. (Meets U. S. Army Specification 2-104B, Supplemental List No. 1.)

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Highest quality-level oil, designed for extremely severe operating conditions. (Meets U. S. Army Specification 2-104B, Supplemental List No. 2, also the rigid requirements of Caterpillar Tractor Company's Superior Lubricants—Series 2.)

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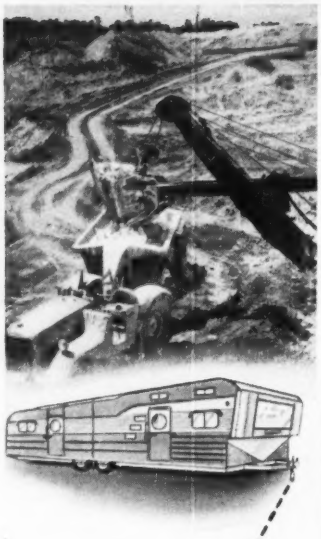
RPM DELO LUBRICATING OILS

New and more Efficient Compounding keeps engines cleaner, increases protection, extends overhaul period

Travelite



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ELEVATING GOOSENECK—Folding gooseneck can be raised or lowered to form a loading ramp which provides a uniform incline from the ground to the trailer platform. An additional feature of this Carryhaul trailer is the tandem-axle assembly which is completely suspended in rubber for flexibility and independent wheel action. The assembly has no grease fittings, requires no lubrication, and has no pins or bushings. Gooseneck is raised to towing position by a power-operated winch on the truck-tractor. Unit will be available in capacities up to 100 tons. **—Martin Machine Co., Kewanee, Ill.**

HEAVY-DUTY ENGINE LUBRICANTS—New line of lubricants is designed for use with diesel and heavy-duty gasoline engines. The RPM Delo lubricants were developed to meet stringent operating conditions including higher horsepower engines, heavier loads, higher operating temperatures, and more severe lubrication requirements.— **Standard Oil Co. of California, 225 Bush St., San Francisco 20, Calif.**

The Eighth of a Series in the interest of more efficient use of steel . . . a vital American resource

USE PROPER STEEL STRESSES AND SPECIFY LACLEDE MULTI-RIB REINFORCING BARS

Concrete reinforcing steel design stresses of 20000 psi (f_s) are based upon old type plain bars with 40000 psi maximum yield strength . . . A safety factor of 2 at the elastic limit.

Laclede Multi-Rib Reinforcing Bars designed for high anchorage* are produced in steel grades with more than 60000 psi yield strength. Retaining the elastic limit safety factor of 2, a design stress with Multi-Rib high strength reinforcing of *30000 psi is justified.*

Sound engineering design dictates efficient use of materials . . . so why waste every third bar?

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**IN EXCESS OF ASTM A305 REQUIREMENTS AND THE LATEST A.C.I. RECOMMENDATIONS.*

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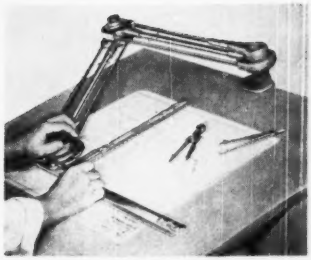
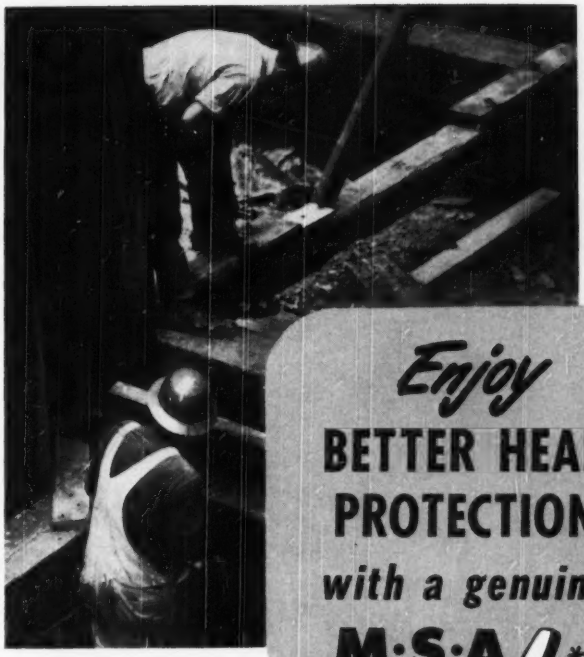
Producers of Construction Steel
LACLEDE STEEL COMPANY
St. Louis, Mo.



Drafting Machine—The Vemco Versatilt features a spring counterpoise and a new indexing mechanism. The counterpoise is attached to the support bracket and permits the Versatilt to function smoothly on a board tilted from 0 to 20 deg. The indexing mechanism, for setting off 15-deg. positions, affords a secure grip for setting the machine. Vertical movement of the thumb release disengages the mechanism for setting angles other than multiples of 15 deg.—**V. & E. Mfg. Co., 758 S. Fair Oaks Ave., Pasadena 20, Calif.**

Chart Speeds Multiplication—Premultiplied tables provide exact answers to multiplication problems involving figures with as many as eight digits. These tables are designed so that each problem is reduced to copying a series of numbers from the chart and then adding them together. Answers are exact with no need for interpolation or estimating the distance between marks on a scale. This economical chart measures 7x11½ in. and is inclosed in plastic which is quickly cleaned and which provides life-time use of the chart.—**Disbursing Agent's Computing Co., Inc., 25 Broadway, New York, N. Y.**

Truck Lifts Round Objects—Worksaver development provides tilting fork trucks with hydraulically operated fingers which grasp and pick up cylindrical objects without the use of pallets or skids. The fingers grasp the load from above permitting the stacking of containers. Truck lifts 15 fpm. with a 3,000-lb. load. Lifting, lowering, and closing of the fingers are controlled from levers at the front of the truck.—**The Yale & Towne Mfg. Co., Philadelphia Division, Roosevelt Blvd. and Haldeman Ave., Philadelphia 15, Pa.**



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There's only one SKULLGARD—the only protective hat high-pressure molded of laminated bakelite—a material proven through years of rugged service to provide the best head protection! Skullgards also give you a special crown reinforced with a steel wire screen molded within the hat, high-quality inner head cradle and sweatband, easy-going wearing comfort with light weight, correct balance and self-ventilation . . . *ask for a demonstration!*

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SAFETY EQUIPMENT HEADQUARTERS MSA

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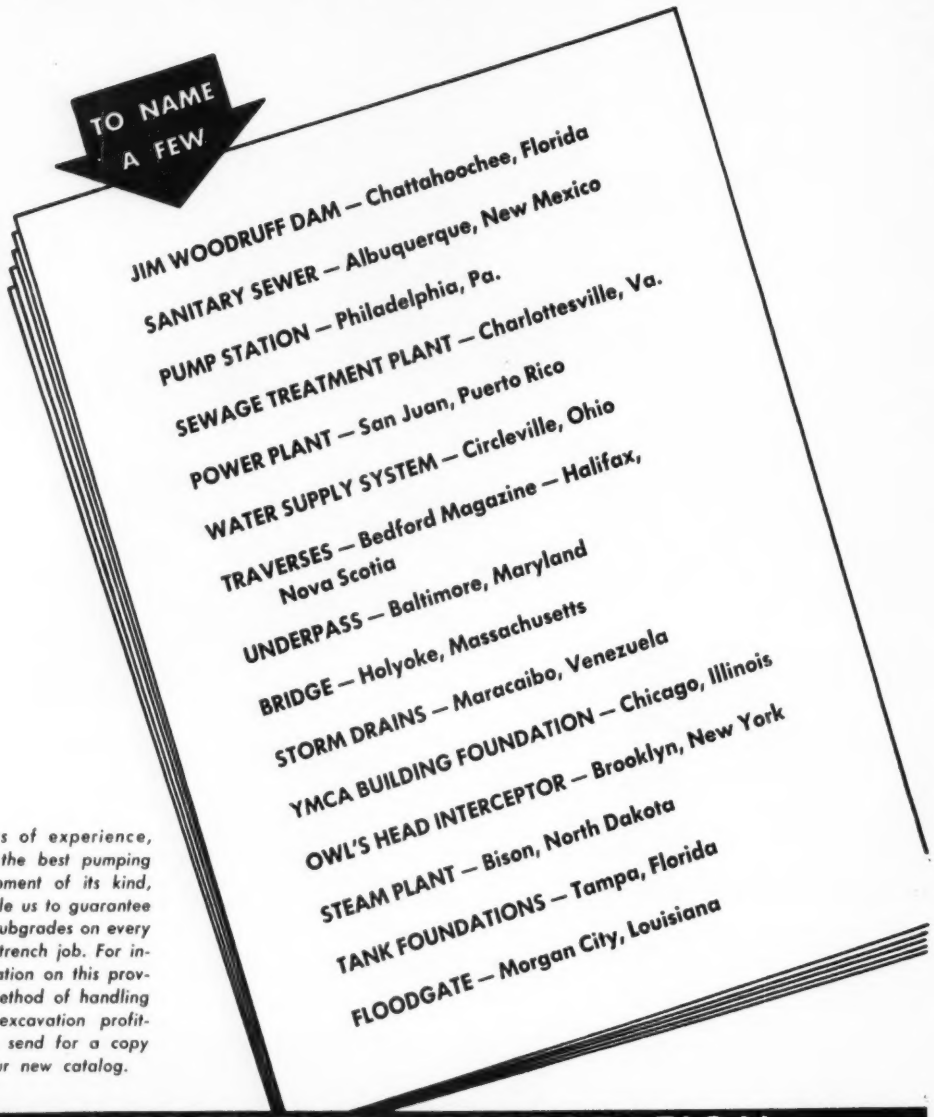
TO NAME A FEW
JIM WOODRUFF DAM — Chattahoochee, Florida
SANITARY SEWER — Albuquerque, New Mexico
PUMP STATION — Philadelphia, Pa.
SEWAGE TREATMENT PLANT — Charlottesville, Va.
POWER PLANT — San Juan, Puerto Rico
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TRAVERSES — Bedford Magazine — Halifax, Nova Scotia
UNDERPASS — Baltimore, Maryland
BRIDGE — Holyoke, Massachusetts
STORM DRAINS — Maracaibo, Venezuela
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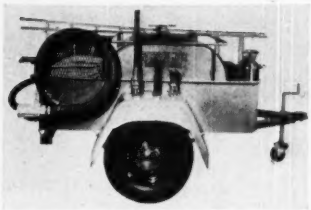
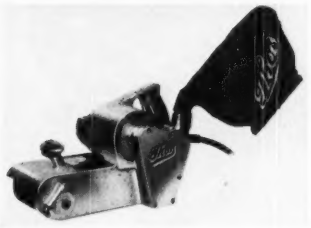


Fire-Fighting Trailer—Porto Pumper is equipped with a rotary positive-displacement rubber gear pump powered by a 4-cycle gasoline engine. It has a 200-gal. water tank for use while hydrant, well, ditch, pond, stream, or other supply of water is made available. The 95-lb. pump can be demounted and carried to any source of water in the event of inaccessibility by the vehicle. Equipment supplied with the unit includes 200 ft. of hose, ax, hand extinguisher. A fog nozzle can be used where water vapor is desirable. Measures 6x9 ft.—**Porto-Pump, Inc., 227 Iron St., Detroit 7, Mich.**

All-Weather Starting Fluid—Ten-second starting of heavy-duty gasoline or diesel engines in 30-below temperatures is claimed for the All-Weather starting fluid. Sta-Vis is a chemical product of high volatility containing a special lubricating ingredient which protects the piston and cylinder walls during cold-weather starting. In addition, Sta-Vis reduces winter maintenance costs through reduction of cylinder wall wear caused by imperfect lubrication at low temperatures and wear and deterioration of batteries caused by heavy power drain of prolonged starting.—**Sta-Vis Oil Co., 500 Minnesota Bldg., St. Paul, Minn.**



Electric Belt Sander—Wood, metal, and stone are sanded by tool using a 4½-in. wide x 26-in. long endless belt. New Silver Line tool features direct spur-gear drive, rapid belt-change device, and heat-radiating system said to increase belt life. Simplified tracking arrangement permits easy centering of belt on roller pulleys. The Thor Silver Line belt sander is available in two models—with or without a dust-collecting system consisting of a suction fan and collection bag.—**Independent Pneumatic Tool Co., 175 N. State St., Aurora, Ill.**

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. . . backed by experience gained in more than 30 years of continuous production and the building of more than 4 million air-cooled engines.

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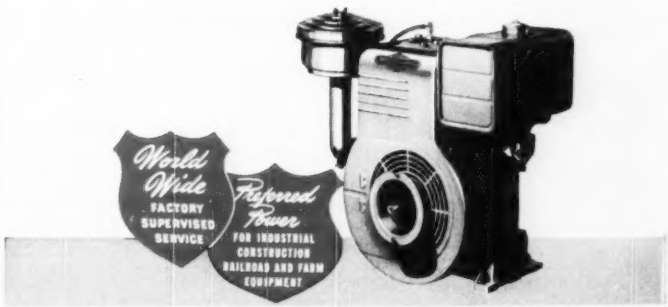
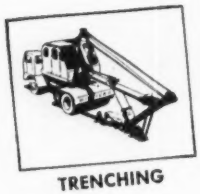
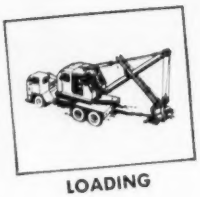



TRENCHING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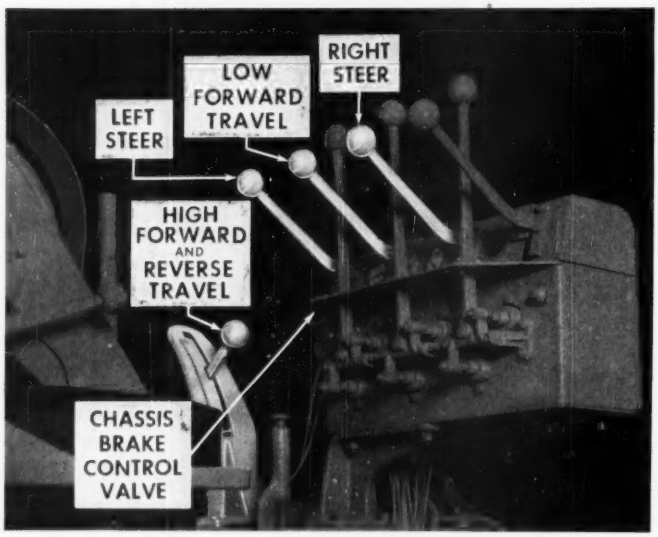

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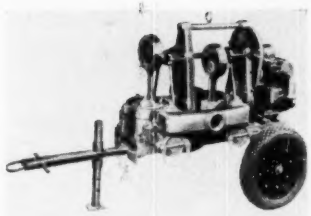
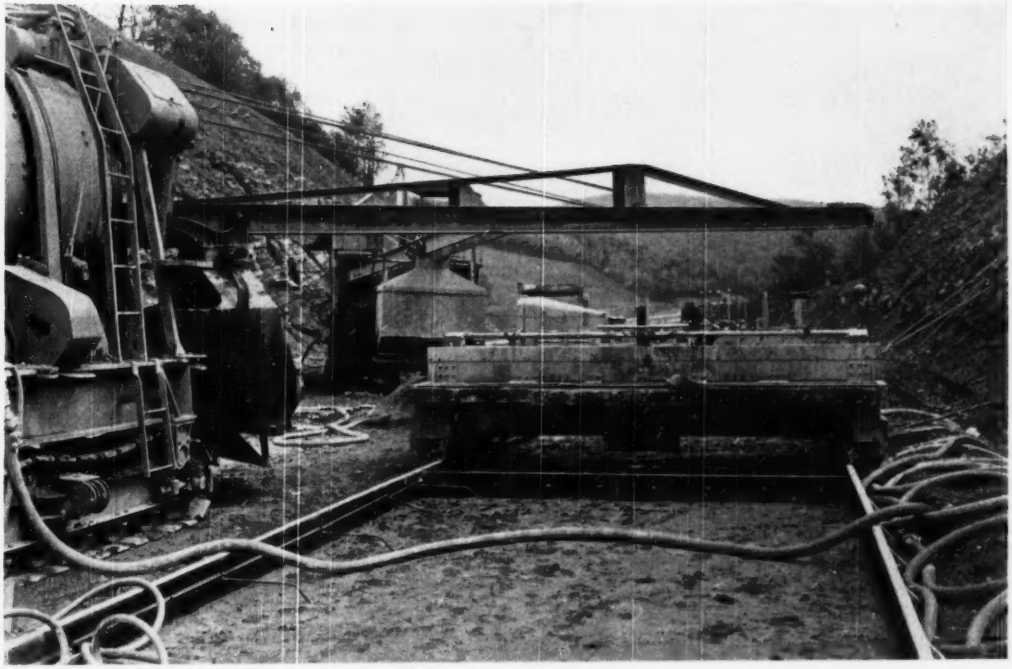


DOUBLE-DIAPHRAGM PUMP — Constant flow of muddy, sandy, or debris-laden water is possible with the Novo double-diaphragm pump, because one diaphragm is always pumping, while the other is discharging. This pump parallels the company's single-diaphragm model in engineering, design, and construction.—**Novo Engine Co., 702 Porter, Lansing, Mich.**

HYDRAULIC KNOCK-OUT PUNCH —Knock-out equipment consists of a hollow-type hydraulic ram of 10-ton capacity and remotely-controlled Porto-Power hydraulic unit. Features include: Operates in cramped spots because there is no wrench to swing; punches truer, more uniform holes, and prevents sudden break-through. Punch equipment is available in four kits with a range of openings from ½- to 4-in. dia.—**Blackhawk Mfg. Co., Dept. J-23109, Milwaukee 1, Wis.**

TWIN-CARTRIDGE RESPIRATORS —Protection against seven respiratory hazards in one respirator is provided by use of a basic face piece and seven interchangeable filters. Face piece is molded from durable rubber and features a rolled edge that curves inward to give a snug fit without leakage. Other features include a flexible fitting brace for shaping to face contours, highly efficient inhalation and exhalation system, and increased field of vision through use of thinner filter cartridges.—**American Optical Co., Southbridge, Mass.**



Rubber Arteries for National Expansion

. . . Republic Hose is used in every industry

Here's an amazing story of progress! Reports show that, up to November of 1949, there was $783,604,000 spent in the United States for the construction of roads and streets. A backlog of $4,430,288,000 was allocated and remains to be spent on additional works this year.

It takes a lot of Republic Water Hose to keep programs like these rolling. The big mixers need water as they move forward. Concrete, curing under the summer sun, must be "wetted down."

Yes, it's a big job—supplying the rubber arteries for our national expansion. It's a job that we take seriously at Republic Rubber!

A network of reliable Republic Distributors covers every important area in the nation. These men will continue to work hand-in-hand with you, supplying you with the proper hose for your particular need.

Like the Champion premium quality all-purpose water hose that is built to resist high pressures and stand up under the severest abuse, each type of Republic Hose is made to give long service life.

See your local Republic Distributor today.

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Reduce operating costs for lower bids...

Low bids are mighty important as long as you retain enough profit. Many experienced contractors have found they can accomplish both by taking advantage of the savings made possible with Armco Corrugated Metal Structures.

Figured on an *installed* basis, Armco Structures save time, labor and money in many ways. They often weigh only one-tenth as much as more massive types, yet are amply strong for the purpose. This means low handling and hauling costs. Job costs go down because unskilled labor quickly makes the installation.

Standard Armco Pipe and PIPE-ARCH are supplied in any length that can be hauled or handled, while larger MULTI-PLATE Pipe, Arches or PIPE-ARCH are shipped knocked-down. No large and expensive equipment is needed for installation. A few men with a rope sling or an A-frame can handle the largest structure.

Assembly is made with simple band couplers, or by bolting prefabricated sections together. No hand excavation is required—no delay for formwork or curing and no backtracking to finish the job. Backfilling is done directly against the metal and traffic rolls immediately.

Bid low with good profit by figuring that next job with an Armco Corrugated Metal Structure. All are ideal for highway, railway, airport and municipal installations. Write for complete data. Armco Drainage & Metal Products, Inc., 3330 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

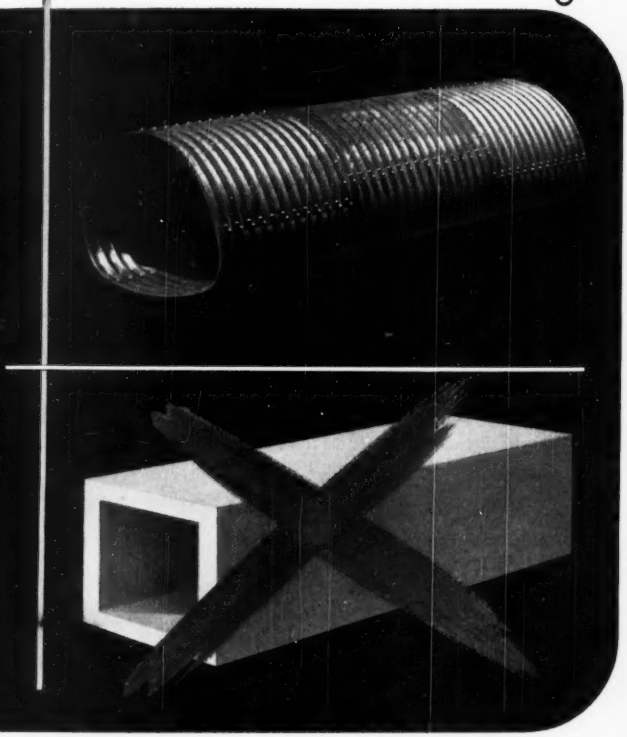
Export: The Armco International Corporation

ARMCO DRAINAGE STRUCTURES

ARMCO

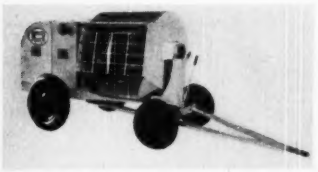
Bids 26% lower

Experienced contractors figure the time, labor, and money-saving advantages of Armco Corrugated Metal Structures into their bids. On drainage work for a southern highway the winning contractor was able to bid 26% lower for Armco MULTI-PLATE PIPE-ARCH than competing bids for a monolithic box structure.



RUBBER PINCH VALVE—Non-corrosive and non-clogging valve is recommended for use in pipe lines handling corrosive liquids, semi-solids, and dry granular materials. Its use is applicable to any line except where the material being transported is damaging to rubber or where high temperatures are involved. It is composed of three parts—rubber tube, pinching mechanism, and housing. Advantages claimed include: Closes easily and positively because the rubber compresses around any coarse particles; provides excellent control; assures leak-proof shut-offs; and provides long life under severe conditions.—**Ray Wilcox Co., 1436 Land Title Bldg., Philadelphia 10, Pa.**

LIQUID-FLOW SLIDE RULE—Plastic slide rule solves problems in the flow of liquids in pipes and tubing. Made of Vinylite plastic, the rule provides accurate calculations of pressure drop, pipe diameter, or rate of flow for any liquid whose viscosity and density are known. This rule can be used to solve problems in either turbulent or streamline flow and automatically indicates which type of flow exists in a given problem. It measures 10½x3¾ in.—**C. J. Major, 2252 Fifteenth St., Wyandotte, Mich.**



PLASTER AND MORTAR MIXER—Tip-over-type plaster and mortar mixer has a capacity of 10 cu. ft. The mixing drum is 37 ft. long and has a 36-in. dia. Mixing blades give an end-to-end action. Features include: Power tilt, 18.7-hp. gasoline-engine power unit, double roller chains and machine-cut gears in transmission to mixing paddles.—**Muller Machinery Co., Inc., Metuchen, N. J.**

Athey FORCE-FEED LOADER-PORTABLE BREAKER PLANT "Buys itself," crushing 35 mi. of gravel road

— for Malheur County, Oregon!

This Athey Force-Feed Loader and Portable Breaker Plant is picking-up windrow oversize pit-run gravel, crushing it and depositing it back on the road surface in a single operation—for secondary road resurfacing.

This equipment works directly from windrows made from original road surfacing with necessary added pit-run gravel.

Operating about 6 hours daily, Malheur County's Athey Force-Feed Loader-Portable Breaker Package crushes 100 cubic yards of pit-run gravel, hourly. That means preparing the gravel to resurface over one-half mile per day.

"Our Athey outfit has paid for itself while crushing pit-run gravel for resurfacing 35 miles of secondary road," reports Malheur County's commissioners. (This is compared to gravel crushed by stationary plant.)

The Athey Force-Feed Loader-Portable Breaker Plant is proving to be an enormous money-saver—in the reworking of gravel, rock, bituminous and other surfaces.

Your Athey-"Caterpillar" Dealer will supply you complete information on this streamlined method—without obligation.

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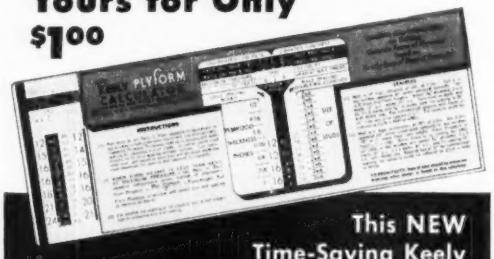

This NEW Time-Saving Keely PLYFORM CALCULATOR

SAVE time designing and building forms of PlyForm, the concrete form grade of Douglas fir plywood. Handy slide-rule calculator gives construction data, based on hourly rate of pour. Included is booklet, "Design Assumptions for New Keely Calculator." Clip coupon — now!

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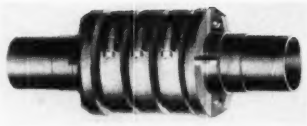


Corrugated Expansion Joints—The CMH joints are specifically designed to absorb vibration and expansion strains, as well as to provide positive control of pipe expansion. Sizes from 4- to 24-in. inside diameters are available in copper and stainless steel; either free-flexing for low to moderate pressure, or controlled flexing for medium to high pressures.—**Chicago Metal Hose Corp., Maywood, Ill.**

Built-Up Aluminum Roofing — The Rey Kool 19-in Selvage built-up roofing consists of two layers of felt protected on top by a layer of aluminum. It is constructed on a 17½-in-wide sheet of stipple-embossed aluminum, factory laminated to a 36-in width of 15-lb asphalt-saturated roofing felt. Laid according to conventional practice, each course covers an area 36 in wide with 17 in of exposed aluminum. Succeeding courses are lapped over the bare felt and ½-in of aluminum, leaving 17 in. exposed. Rey Kool roofing weighs 40 lb/square, and is distributed in 40-lb rolls containing 72 lineal ft.—**Reynolds Metals Co., Building Products Division, 2000 S. 9th St., Louisville, Ky.**

Telescopic Lift Truck—New Wagnermobile has a 62-ft. tall scaffold lift, rather than earthmoving or cement work attachments. Unit with hoist nested is 20 ft. in height. It is powered by a Hercules 92-hp. diesel engine and is hydraulically operated with the exception of the cables which lift and lower the hoist. The scaffold itself measures 3x12 ft. and is equipped with adequate safeguard rails. A remote control lever enables workers to lower themselves.—**Mixermobile Manufacturers, 6855 N. E. Halsey St., Portland, Ore.**

★★★★ **Barber-Greene** ★★★★

PRTD. IN U.S.A. B-G COST-SAVING BULLETIN NO. 4907 47M AM-10-60

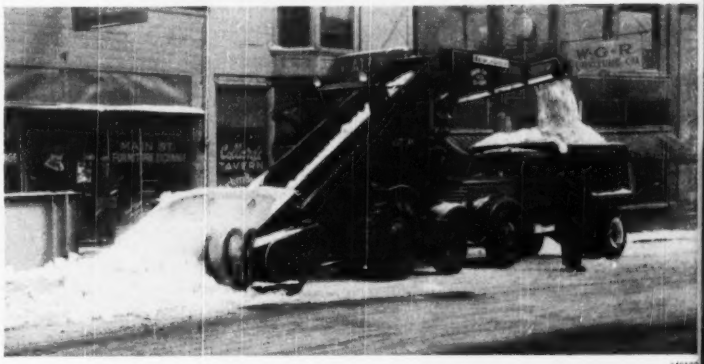
NEW SAVINGS IN LOADING, DITCHING, CONVEYING, AND PAVING WITH B-Gs

B-G Finisher Lays "Red Carpet" to Buckingham Palace

LONDON, England:—London's famed Mall, which features so prominently in the news whenever the King officially leaves or enters Buckingham Palace, is getting a new regal "red carpet" of red asphalt, placed by a B-G Tamping-Leveling Finisher. Under the direction of the Ministry of Works, the ancient wood block paving of the Mall was removed, and the sub-grade repaired. After a three-inch base course was placed, a one-inch wearing course of red granite, limestone dust and red (pigmented) asphalt was laid. Finally, red granite chips were spread as a seal coat.

The Limmer and Trinidad Lake Asphalt Company, contractors for the work on the Mall, has eighteen B-G Tamping-Leveling Finishers in operation—an example of how popular B-G Finishers are with contractors throughout the British Isles and the Continent. Their high speed performance, ability to place a smooth, level surface regardless of variations in the sub-grade are features that have established them as the leading road-surfacing method.

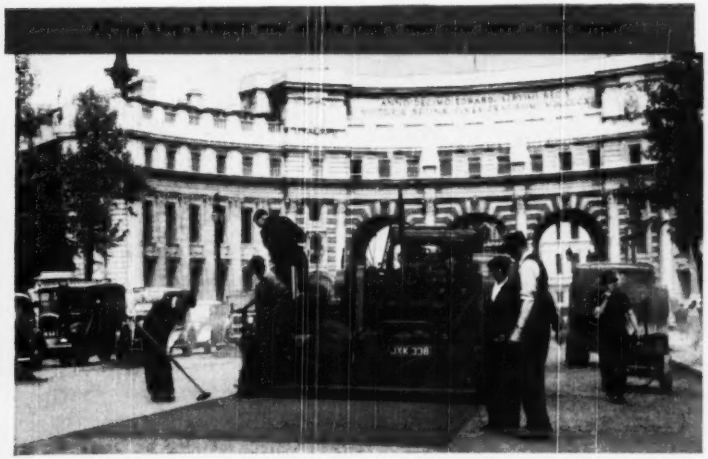
Green Bay's SNOW Loader Removes 562 Loads in 14 Hours



Green Bay, Wis.:—After one storm here, the city's B-G Snow Loader, working with twelve trucks, removed a total of 562 loads in a fourteen-hour period, loading a seven-yard truck in from 16 to 30 seconds. Such performance has meant a tremendous saving in costly truck time—especially when compared with manual methods or with machines not specifically designed for snow removal.

Green Bay, typical of so many other "snow-belt" cities, has found that the B-G Snow Loader answers the problem of getting busy streets clear of snow with minimum traffic delay—and minimum cost. The Loader meets snow removal emergencies anywhere in the city in a matter of minutes—traveling under its own power at over seven miles per hour.

Wichita, Kan.:—This city's use of B-G 522 Snow Loader shows how a community can benefit from the two-way service it makes possible. In the summertime the 522 Loader loads trucks with sand, gravel or stone at a 1½ yard-per-minute rate. As winter approaches, by simply substituting an inexpensive and easily installed snow loader flight line, Wichita's 522 is equipped to load snow at as much as five yards per minute.

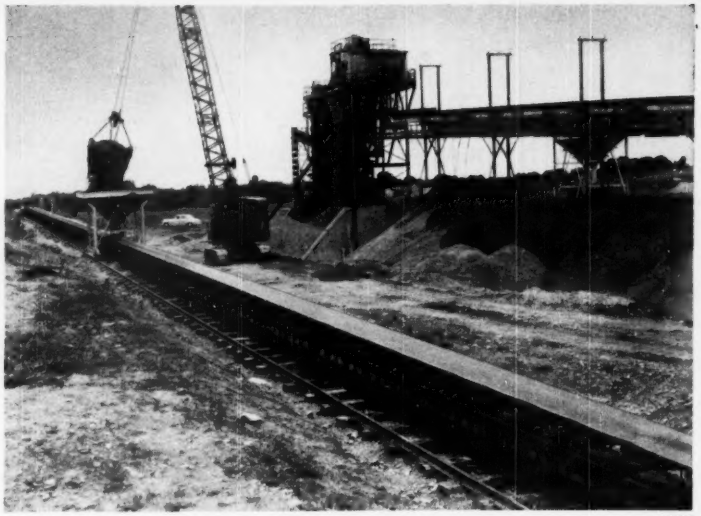


Digs, Screens and Loads Steel Mill Sand in One Operation

A-670-B

Leetonia, O.:—Single-pass performance of three important operations—digging, screening and truck loading—is standard procedure for two B-G Crawler Mounted Loaders operated at the Francis Brennan pit near here. Brennan, who supplies fine, screened, high clay content sand to the Youngstown steel mills, began ten years ago with a single machine and added the second Loader recently to bring the operation up to peak capacity.

Operating each Loader is essentially a one-man job. Thus at extreme low cost, maximum volume of an exceptionally fine product is obtained here where everything over $\frac{3}{8}$" is considered "oversize" and removed. Brennan's Crawler Mounted B-G Loaders are part of a complete B-G line which includes pneumatic-tired, self-propelled types for all bulk materials truck-loading services.



849227

Consumers Company speeds processing with barge-loading conveyors

Lacon, Ill.: One of the Midwest's largest aggregate producers, Consumers Company, solved its most recent large scale handling problem through the skillful use of an interesting plant-to-barge belt conveyor system. As a result, the company has stepped up its output to 250 tons per hour at its river gravel plant near here.

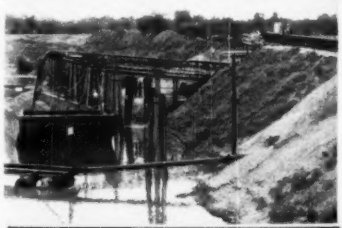
Consumer's dredge works in an inlet off the Illinois River, pumping up sand and gravel from an estimated 163 acre bed. The material is pumped directly to a tower screening and processing plant on the bank where the wet aggregate is sized and separated. Stone of uniform 1" size is discharged from the plant over a B-G Belt Conveyor at a height of some 70 feet.

Finer sizes are carried out of the plant in a long de-watering flume which forms a long stock pile adjacent to a 320′ B-G Belt Conveyor. This Conveyor is loaded from a crane-fed movable hopper and discharges into a barge-loading Shuttle Conveyor. The 850-ton barges are quickly loaded on a highly economical basis.

On simple conveyor set-ups such as this one, as well as on the most elaborate type of conveying jobs, B-G's "standardized" design, which permits easy assembly and equally easy disassembly for relocation, is a decided asset.

B-G Barge Loading Shuttle Conveyor loading 850-ton barge at Consumers Co. gravel plant.

849229



—an interesting panorama of con-

Soft Ground or Caliche . . . These B-G Ditchers Take It in Stride

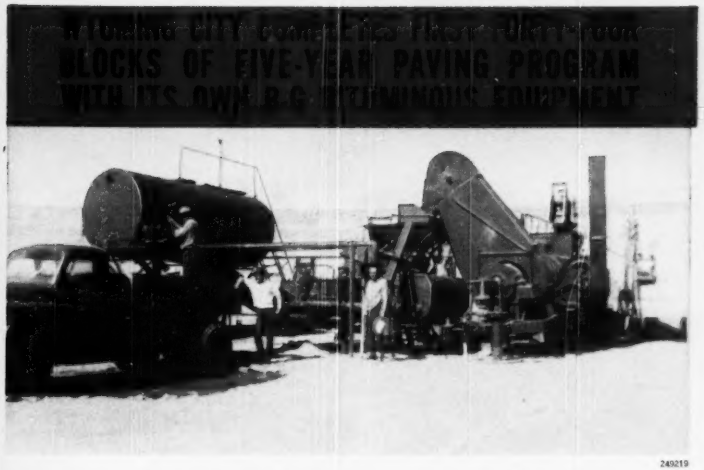
849177

Dallas, Tex.:—The performance of their B-G Runabout Ditcher has shown officials of a local gas company how to cut the cost of digging scattered service trench even under toughest conditions. The Runabout has proved that it will dig at an economical rate even through tough caliche and through soils containing rocks, boulders and abrasive sands. Much credit for this performance is given to the B-G Vertical Boom with "milling action" bucket line that literally "mills" its way into the soil.

The Runabout drives to scattered jobs at 15 miles an hour under its own power—digs close to obstructions, leaves no ramp to be dug out by hand.

847477

Aurora, Ill.:—All classes of digging confront the B-G 44C Ditchers operated by a midwest utility in furthering the company's expansion program. Not the least difficult is the job shown here—digging in tough, sticky soil. Here again the efficiency of the B-G Vertical Boom with "milling action" bucket line pays off. As the line flexes over the head sprocket, the heavy material is literally "kicked out," and the trench is dug at a steady pace. The bucket line is protected by the Barber-Greene Automatic Overload Release which trips automatically when a boulder or other hidden obstruction is encountered—and automatically resets itself when the obstruction is removed.



249219

Program Calls for Paving Every Street in Town . . .

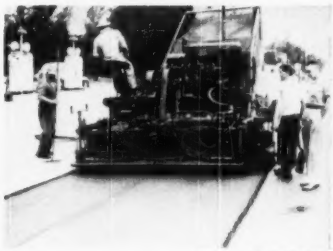
Casper, Wyo.:—A record of paving 44 blocks of streets between June 8th and August 10th with their own B-G equipment—plus a five-year plan for paving every street in the city—is the example of a practical improvement program furnished by this community.

City officials, anxious to provide taxpayers with the best streets possible, were confronted with the problem of finding the contractor and equipment to handle the work. Since these were not available locally, the city decided to do its own paving work, selecting a B-G Maintenance Plant and Tamping-Leveling Finisher for the job. The B-G Plant is set up in a gravel pit owned by the city and charged by a front-loading shovel. The bituminous mix is trucked to the job site where the Finisher places a smooth, level surface regardless of variations in the subgrade.

Quoting Mr. Leo Hallock, Councilman, the work done so far this year has "already paid for the plant and other necessary equipment."

"Rubber Road" Experiments Attract Attention of Road Builders, Safety Officials

Interested group of officials watching application of rubber surface by B-G Finisher 5 miles west of Richmond. Photo courtesy Virginia Department of Highways.



CHICAGO DAILY TRIBUNE

Experimental rubberized pavement laid on Ohio road by B-G Finisher. To be studied by State Highway Department officials for durability and non-skid qualities.

For years the idea of somehow incorporating the non-skid and durability features of rubber into road surfaces has challenged interested contractors, engineers, and safety officials. In recent months much progress has been made towards proving—or disproving—the practical usefulness of such an idea. All of the test roads reported have been laid with Barber-Greene Tamping-Leveling Finishers. Actually, while only a small quantity of rubber is used in the roadway (in the neighborhood of 7 lbs. to a ton of mix) it is felt that even this small amount will serve to skid-proof the surface sufficiently to permit stops on wet or dry pavement sooner than if the rubber were not included. In the Virginia tests, 500 ft. of rubber asphalt and 500 ft. of regular sand asphalt were laid end to end in a 1,000 ft. strip. In the Ohio test the 300 ft. test road is now being studied by the State Highway Department.

Versatile Unloader-Conveyor Team Solves Variety of Problems

449895

Colchester, Ill.:—By-passing the need for using an expensive clamshell or shovel to load their mixer-charging hopper, McCann and Co., Inc. enlisted their low-cost, portable B-G Conveyor and Belt Car Unloader to do the chore at the site of their earth-filled dam job near here. It is practically a one-man operation: a bulldozer merely keeps the Unloader supplied with sand or stone and the machines do the rest. When not in use here, the Conveyor and Unloader are towed 5 miles to town to unload aggregate and cement from railroad cars—real every-day usefulness.

Oklahoma City, Okla.:—Building the city's South Side Disposal Plant called for filling 12 filter beds with high grade limestone to a depth of 6′ to 7′—which meant unloading nearly 1800 carloads of this costly, dust-free rock. Not long ago this would have required expensive unloading equipment, but the B-G "team"—Belt Car Unloader with Portable Conveyor—unloaded the cars so rapidly that they had to be kept operating at less than capacity to allow time for the stone to be placed in the beds. Time after time on the widest variety of unloading jobs, this team has set new standards for low cost, fast unloading of bulk materials.

449288

Barber-Greene

NEWEST IN ASPHALT, MATERIAL HANDLING AND DITCHING EQUIPMENT

549137

New Heavy-Duty Portable Conveyor

Latest addition to the long line of modern Barber-Greene Portable Belt Conveyors is the model 374, designed for a wide range of heavy duty loading, unloading and stockpiling services—for municipalities, contractors, industrial plants, mine and aggregate producers, etc. The 374 is available in a wide selection of lengths up to 60′ and in belt widths of 18″, 24″ and 30″. It further features swivel wheels, hydraulic hoist, antifriction carriers and a choice of gasoline or electric power. The 374 is entirely line-shaft driven to assure smooth, steady operation and low maintenance. Also available without the truck as a handy, semi-permanent unit.

Here Are Suggestions for Cutting Road Costs

BULLETIN 849

"Suggestions for Cutting Road Costs" is the title of a new bulletin which should be of vital interest to all connected with road construction—contractors, engineers, state and county highway department officials, etc. Here is a new kind of literature—which gives valuable facts on stretching the road-building budget. Use the coupon to get your copy.

Use This Coupon to Get Full Information on B-G Equipment That Interests You

Make up your mind now to get full information on the Barber-Greene equipment which will help you save man-hours and money. Complete specifications and literature are available on all B-G equipment described in this bulletin. Use the convenient coupon below to indicate the equipment in which you are interested. Look this bulletin over again—and fill in and send the coupon today!

Barber-Greene Company, Aurora, Illinois, U.S.A.
Cable Address: Bargreene

Send information on the B-G equipment as indicated:

- ☐ Have Barber-Greene representative call.
- ☐ B-G Snow Loaders
- ☐ B-G Bucket Loaders of _____ Capacity
- ☐ B-G Permanent Conveyors
- ☐ B-G Bituminous Mixing Plants of _____ Capacity
- ☐ B-G Finishers
- ☐ B-G Portable Conveyors
- ☐ B-G Belt Car Unloader
- ☐ B-G Ditchers
- ☐ B-G Power Coal Loaders
- ☐ **"Suggestions for Cutting Road Costs" Bulletin**

Name.....

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Position.....

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City.....Zone.....State.....

C. M. 30,000

B-G Distributors Offer Wide Range of Valuable Services

Barber-Greene distributors stand ready to help in all phases involving the proper application of Barber-Greene equipment to your particular problem. In sales, service and engineering they have factory-trained experts who are well qualified to offer you valuable assistance.

Ask your Barber-Greene distributor for other cost-saving bulletins listed below:

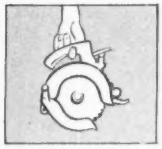
Bulletin 4901, Portable Conveyors
Bulletin 4902, Bucket Loaders
Bulletin 4903, Bituminous Equipment
Bulletin 4904, Ditchers
Bulletin 4905, Permanent Conveyors
Bulletin 4906, The Complete B-G Line
Bulletin 4908, Coal Handling Equipment

BARBER-GREENE COMPANY
Aurora, Illinois, U.S.A.

PORTER—CABLE Speedmatic SAW

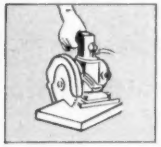
It's BALANCED 2-WAYS...

IT'S BALANCED



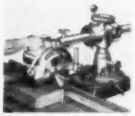
1. When You Lift It!

Simply pick up a Speedmatic Saw at your dealer's. See for yourself how perfectly it balances—no veer—no tip—no tilt. Hang it from one finger. That's *Static Balance*—the first step in easier sawing. Only *Speedmatic Has It!*



2. When You Use It!

Now press the trigger. Note that Speedmatic balanced "feel" in action—how easily it handles—how smoothly it cuts—how it "obeys" your guidance. That's *Dynamic Balance*—balance in action. Only *Speedmatic Has It!*



SPEEDMATIC Radial Arm . . $183.00

With this mounting your Speedmatic is set for fast, accurate mitering (straight and compound), bevelling, cross-cutting, ripping — all the specialized uses of a radial saw at a fraction of the cost of purchasing a complete radial saw. All positions are calibrated for quick, easy, accurate settings.

RESULT: No wasted energy in this saw! No jerk when you press the trigger—just sure, steady, speedy cutting without pushing or forcing. Perfect accuracy, too—you can see your cutting line at all times, even when bevelling or angling. As for safety . . . your *Speedmatic* starts safely (without veer)—saws safely (on its extra broad base)—finishes safely (rests securely on main piece). And it handles so easily, you can do one-handed sawing without difficulty even from the most awkward positions. More:—one glance at the sturdy, polished aluminum housing—one feel of the friction-free operation—will convince you that your Speedmatic is built—and balanced—to *last*. Try one at your Porter-Cable dealer's today.

More: *—your Speedmatic distributor has a complete line of balanced Speedmatic construction tools—portable electric saws, sanders, routers, mortisers, planes, grinders, floor sanders and edgers.*

PORTER-CABLE MACHINE CO.

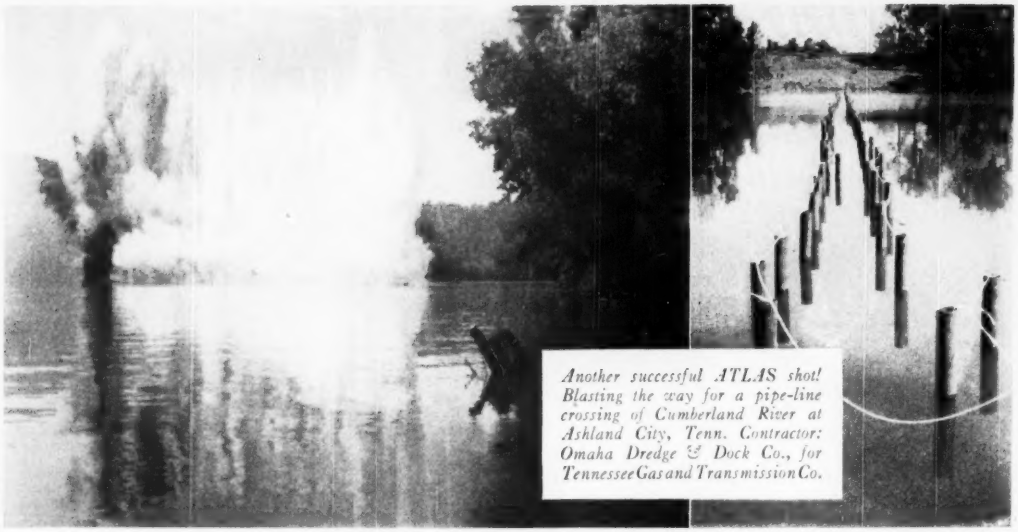
2502 N. Salina St., Syracuse, N. Y.

Manufacturers of SPEEDMATIC and GUILD Electric Tools

THE BALANCED LINE

In Canada (except B.C.): Write Strongridge, Ltd., St. Catharines, Ont.

Blast A Ditch Under A River?



Another successful ATLAS shot! Blasting the way for a pipe-line crossing of Cumberland River at Ashland City, Tenn. Contractor: Omaha Dredge & Dock Co., for Tennessee Gas and Transmission Co.

Here's a "natural" for Atlas explosives and Atlas know-how!

When it comes to tough blasting jobs, construction engineers know that Atlas has the *right* explosives . . . that Atlas men serving the construction industry have the explosives "savvy" that saves contractors time, money, and trouble.

For example, blasting a ditch for a pipe-line river crossing takes properly formulated explosives, especially packed. And just as important, it takes skill and know-how. Together, Atlas explosives, Atlas skill, and Atlas experience spell out the difference between profit and loss to the contractor on this highly specialized type of shooting.

For jobs where high fragmentation and "drive" are needed . . . or where noise and vibration are a problem . . . or where throw of rock must be controlled, contractors depend on the ROCKMASTER* milli-second delay blasting system pioneered by Atlas.

So, whether your next blasting job is for a pipe-line, road, tunnel, excavation, or demolition—call on Atlas for the *right* explosive plus *service*.

*ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address*—Atpowco

TOURNAPULL WITH 'DOZER BLADE—Bulldozer is designed to increase the versatility of the Model D Roadster Tournapull. It is cable-activated and electrically controlled by a switch mounted on the dash-control panel. The blade has a bowl length of 6 ft 8¾ in., and a height of blade and bowl of 32½ in. Its cutting edge is reversible, with hard-surfaced replaceable tips. Blade can be raised 3 ft above the ground.—**R. G. LeTourneau, Inc., Peoria, Ill.**

TUBE-FLARING TOOL — Rol-Air tool flares and burnishes copper, brass, or aluminum tubing for making tight, strong, flared joints. It has three rollers embodied in the spreader cone so that flare is rolled out with the tubing extended above the face of the flaring block, maintaining original wall thickness. Tool can be used with ¼-, 5/16-, ⅜-, ½-, and ⅝-in. (OD) tubing.—**The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago 7, Ill.**

WHITEPRINTING MACHINE — Automatic whiteprinter produces ammonia-vapor prints at speeds up to 32 fpm. The Pacemaker accommodates all types and sizes of diazo materials up to 42 in. wide. A push-button master switch controls all electric motors and heaters, instantaneously starting or stopping the entire mechanism. A sliding-revolving-contact feature enables operator to select either sliding-revolving or straight-revolving contact. The Pacemaker is 6 ft. 6 in. wide, 7 ft. tall, 4 ft. 5½ in. deep, and weighs 2,500 lb.—**The C. F. Pease Co., 2601 W. Irving Park, Chicago, Ill.**

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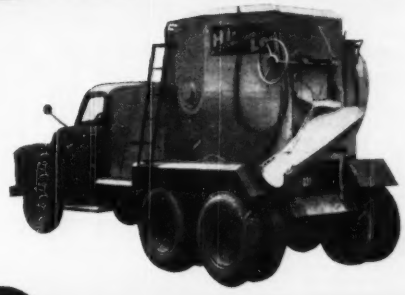
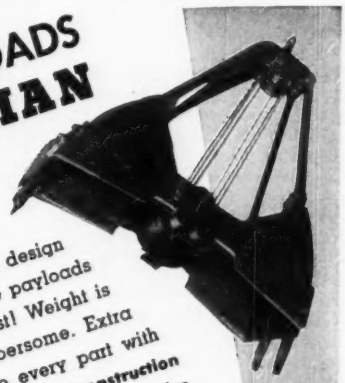
CONCRETE TRANSPORT MIXER CO.
TRUCK MIXER
Hi- DISCHARGE PRODUCTION SPEED PROFITS!

Lo- HEIGHT COST MAINTENANCE TIME LOSS
REVOLUTIONARY TRUCK MIXER DESIGN
CONCRETE TRANSPORT MIXER CO.
4980 Fyler Avenue St. Louis 9, Missouri

BIGGER PAYLOADS with WELLMAN Williams Type BUCKETS

• Exclusive features in design and construction make payloads bigger . . . at lower cost! Weight is balanced, not cumbersome. Extra strength is built into every part with the sturdy **welded rolled steel construction** pioneered by Wellman, the leader for over fifty years. A type for every service!
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7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

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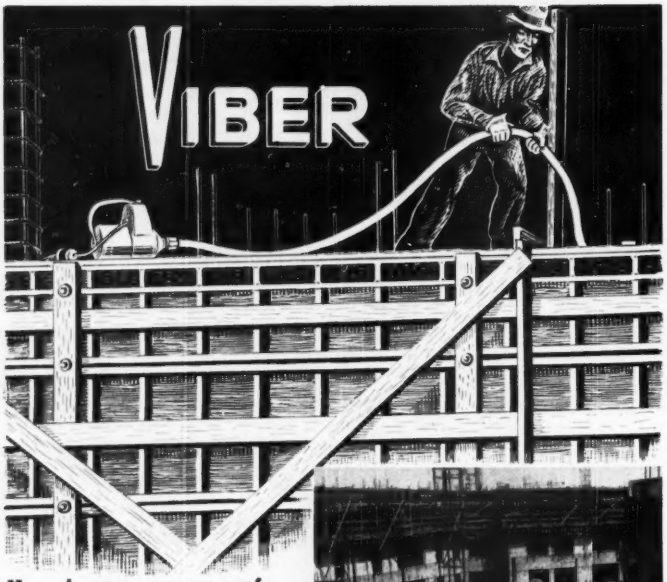


Now in use on one of the largest architectural concrete construction jobs in the United States

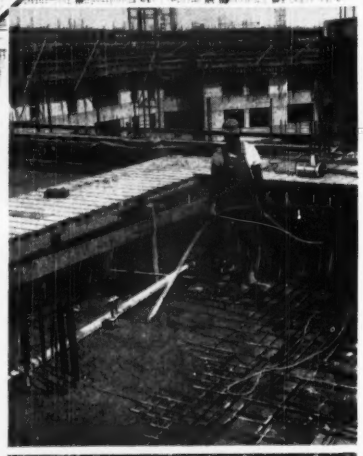
New architectural and engineering techniques are being pioneered on the Metropolitan (Parklabrea) Housing Project in Los Angeles.

VIBER SELECTED...One of the five unusual features of this tremendous project is an effort to reduce time, effort and costs in concrete placement operations. The exclusive use of Viber equipment on a project that is testing new construction methods and techniques illustrates the regard engineers and construction men have for this interchangeable line of concrete vibrators.

VIBER RUBBER TIPS...Viber's development of rubber tips has reduced damage to expensive forms....an important phase of architectural construction costs.

GOVERNMENT AND RESIDENTIAL HOUSING...The vast program of Government and residential housing now in planning and process is just one of the fields in which Viber plays an important roll.

For further information on the complete line of Viber Interchangeable Vibrators, please wire or write



$40,000,000 Parklabrea Housing Project, Los Angeles

VIBER COMPANY *CONCRETE VIBRATORS SINCE 1931*
Dept. 19, 726 South Flower Street, Burbank, California.

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

BAR-BENDING TOOLS—Hand- and hydraulically-operated bending machines for pipe and tube, reinforcement bars, and sections and structural shapes are described in 40-p. Catalog No. 49. This handy, pocket-size edition contains illustrations of sample bends and information on specially built bending machines for specific uses.—**Wallace Supplies Mfg. Co., Inc., 1300 Diversey Parkway, Chicago 14, Ill.**

ALL-METAL CLUTCHES; BRAKE LININGS—Four new catalogs cover the complete Velvetouch line of all-metal clutch plates, facings, and brake linings for Caterpillar, Allis-Chalmers, LeTourneau, and International Harvester tractors and earthmoving equipment. Each catalog covers standard and replacement parts for an individual line of equipment, and is clearly indexed for easy reference.—**The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.**

LETTERING-GUIDE STYLE CHART—Templates for a wide variety of lettering styles are listed in 4-p. bulletin. The Varigraph lettering aid is designed to permit a wide variety of width and height of letters with each template. This is made possible by making both the vertical and horizontal arms adjustable. Bulletin lists more than forty types of letters.—**The Varigraph Co., Inc., Madison 1, Wis.**

PROPERTIES OF PONDEROSA PINE—Architectural, structural, and design uses for Ponderosa Pine are featured in 72-p. catalog. The various uses for this wood are illustrated by photographs of actual installations. Text describes its features.—**Western Pine Association, Dept. PD, 510 Yeon Bldg., Portland 4, Ore.**

UNIVERSAL ELECTRIC TOOLS—Complete line of Thor universal electric portable power tools is described in Catalog E-2. This new catalog gives complete data, including prices, of all the Thor tools. Also described in this catalog are the new Silver Line tools.—**Independent Pneumatic Tool Co., 175 State St., Aurora, Ill.**

THE BUTLER SALES MANAGER EXPLODES:

"HOW COME! WE GOT ONLY 10 OUT OF 12?"

"Listen you! I'll repeat it! How come we got only 10 out of 12 of the Batching Plants on that big Detroit-Wayne Major Airport job?

Butler Salesman: "Well, ah—you see—ah—

Butler Salesmanager: "Yeah! I see alright . . . Where were you when those two other plants were bought? Playing marbles, maybe?

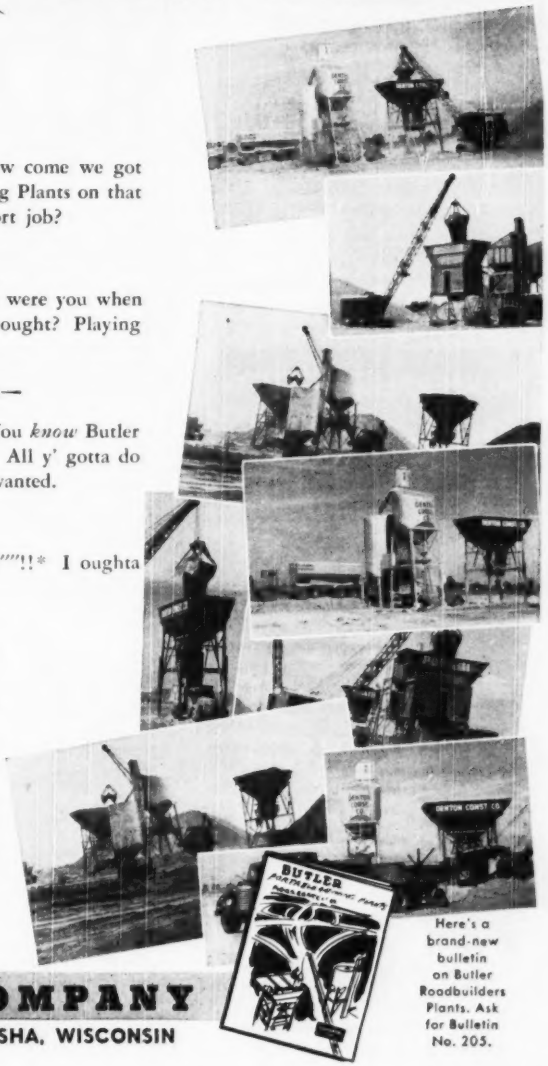
Butler Salesman: "Oh, no sir. You,—well, I mean—

Butler Salesmanager: "Shut up! I'll do the talking. You *know* Butler Batching Plants sell themselves. All y' gotta do is just be there to know what's wanted.

Butler Salesman: "Yessir. I—ah—well,—

Butler Salesmanager: "Only 10 out of 12! —?%$*#""!!* I oughta shoot myself!

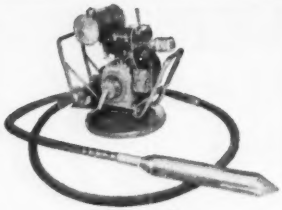
Yes, it's true alright. Out of 12 Bulk Cement and Aggregate Batching Plants used by the three-contractor Team that built the Detroit-Wayne Major Airport, only 10 were built by BUTLER. We just don't understand it!



Here's a brand-new bulletin on Butler Roadbuilders Plants. Ask for Bulletin No. 205.

BUTLER BIN COMPANY

949 BLACKSTONE AVENUE • WAUKESHA, WISCONSIN



Concrete

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Gasoline Engine or
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CONCRETE GRINDERS

OTHER PRODUCTS

FRONT END SHOVELS
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for Asphalt and Tar

AGGREGATE DRYERS
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ASPHALT PLANTS
Portable — Stationary

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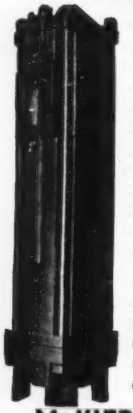


McKiernan-Terry Pile Hammers are job-proved and time-tested . . . the choice of engineers and contractors on major construction projects throughout the world. Available in a standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Write for free Bulletin.

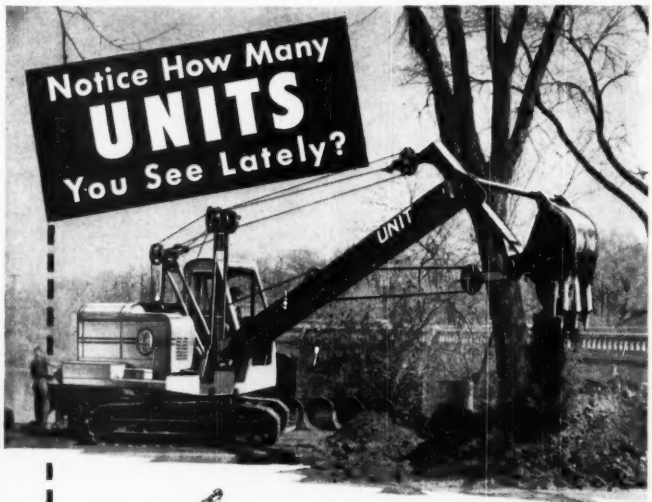
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

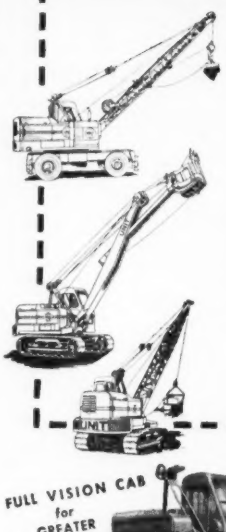
McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
14 PARK ROW, NEW YORK 7, N. Y.

ROCK-BORING MACHINE — Horizontal- and vertical-type rock-boring machines are described in this 8 pager. The McCarthy drill bores up to 12-in.-dia. holes to depths of 150 ft. Complete specifications and operating features are listed in the catalog. Pictures illustrate various applications.—**The Salem Tool Co., Salem, Ohio.**

WEARING PARTS FOR SHOVELS, CRUSHERS—Oro-alloyed manganese-steel parts for wearing surfaces of power shovels and crushers are illustrated and described in Bulletin 1049. This bulletin points out which particular alloyed manganese steel renders maximum service for a specific application such as crawler treads, dipper teeth, and crusher jaws.—**The Kensington Steel Co., 505 E. Kensington Ave., Chicago 28, Ill.**

SOUND-POWERED TELEPHONE—Operates without batteries or any outside power for either talking or ringing. Features and fundamentals of operation are listed in this brochure. These telephones are recommended for tunnel work and similar operations. They are weather and dust proof. Range is 30 mi.—**United States Instrument Co., 409 Broad St., Summit, N. J.**





Everywhere . . . on all types of jobs . . . you see UNITS operating at peak efficiency. They LIFT . . . LOAD . . . HAUL . . . DIG . . . with speed and precision, and with power to spare.

UNITS are chosen for the tough jobs because they are carefully engineered and ruggedly constructed, backed by a quarter century of experience building shovels and cranes exclusively. The new FULL VISION CAB provides maximum visibility. Operator sees in all directions. Promotes safety.

UNITS are available in ½ and ¾ yard excavators and cranes up to 15 tons capacity. Crawler or mobile type...Fully convertible to ALL attachments . . . Diesel or gas engine. Write for literature.

UNIT CRANE & SHOVEL CORP.
6305 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

LET US TELL YOU THE REASONS WHY

FULL VISION CAB for GREATER SAFETY

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SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

FASTENING SPECIALTIES—Manual (28 pp.) contains full descriptive and engineering data on a broad range of blind rivets, anchor nuts, panel fasteners, door-retaining springs, and other newly-developed fastening devices. Applications include joining metal-to-metal, metal-to-plywood, and other combinations. **—South Chester Corp., Finance Bldg., Philadelphia 2, Pa.**

AERIAL-SURVEY SERVICE—Basic principles of modern techniques employed in producing aerial-topographic maps are explained in new brochure entitled "Wings for the Transit." This booklet illustrates various stages in the preparation of accurate maps from precision aerial photographs, shows samples of these photographs, and indicates the type of equipment used in producing photogrammetric maps.**—Lockwood, Kessler & Bartlett, Inc., 32 Court St., Brooklyn 2, N. Y.**

HINTS FOR USING FORM CLAMPS—Suggestions for using Williams form clamps and their accessories are listed in new folder. Data are provided on spacing of walers, clamps, form-width spacing, securing corners, and other pertinent facts. The lower portion of the folder contains a rod layout sheet for convenience in figuring inner rods. It is perforated for easy detachment.—**Williams Form Engineering Corp., 1501 Madison Ave., S. E., Grand Rapids 7, Mich.**

CONWAY MUCKING MACHINE—Operational and construction features of the Conway mucking machine are listed in Catalog 49043.5. Machines listed are the new Type 100, the improved Type 75, and Types 50-B and 120 Series Conway shovels. Data in the catalog cover a general description of the Conway units, representative installations, and special equipment.**—Goodman Mfg. Co., Halsted St. at 48th, Chicago 9, Ill.**

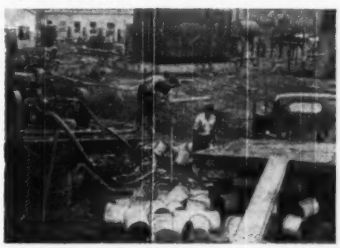
TRUCK AND TRAILER SIZE LIMITS—Laws affecting size and weight of trucks, trailers, and truck-trailer combinations are compiled in a pocket-size manual. Condensed in quickly understandable form, the booklet lists laws for every state and the District of Columbia. Permissible axle loads, length of trailers, over-all lengths, number of trailing units, total gross loads, and all other laws affecting truck operation are covered. A thorough research of every state was made in order that recent changes in laws made by the last legislatures would be included. This 23rd reprint is up to date as of Nov. 1, 1949.—**The Four Wheel Drive Auto Co., Clintonville, Wis.**

THE Thoro System

Water is precious and valuable for many services and leakage through crevices in rock berm permitted the water to waste out of this dam on the property of a large Natural Gas Company.

Everything is ready to pump 3600 lbs. WATERPLUG into the rock berm, to seal the crevices. Five minutes was required to pump material into place.

The pressure gauges are watched carefully to control the pumping operation and prevent clogging and setting in the pipes.



The pumps, hose and all equipment are washed and cleaned quickly to prevent hardening of WATERPLUG in the equipment.

Do you have masonry problems?

They can be corrected with THORO System Products

WATERPLUG — STOPS LEAKS
THOROSEAL — SEALS SURFACE
QUICKSEAL — BEAUTIFUL FINISH

Over 65,000 Contractors and Builders use these products as standard for protection of masonry, above and below grade.

Get our new 20-page brochure, with designer's guide. Pictorially described, in detail . . . "How to do it".

Standard Dry Wall Products

BOX X. NEW EAGLE, PENNA.

9 YEARS DEVELOPMENT

ON FIELD TESTS IN EVERY TYPE OF PROSPECTING AND STRIPPING THROUGHOUT THE WORLD.

Also available in the popular STANDARD ONE-SPEED DRILL

The Parmanco Two-Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-quarter inch equipment. Under favorable conditions it is being used to greater depths and can be used with six-inch equipment.

PARIS MANUFACTURING COMPANY

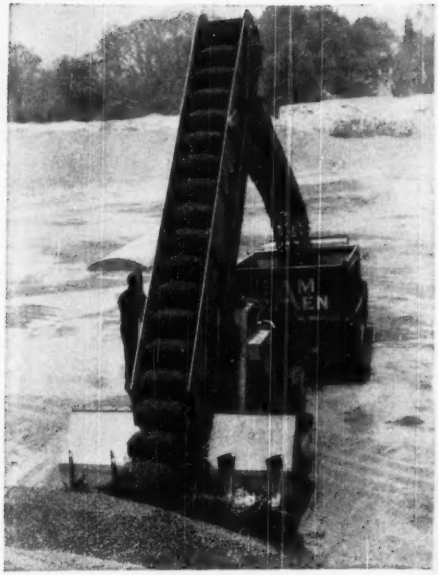
PARIS, ILLINOIS

SNOW-REMOVAL EQUIPMENT — Bulletin 4911 (8 pp.) describes the Adams line of rotary snow plows; Bulletin 4912 (4 pp.) describes the Adams line of snow plows and snow wings. The rotary is designed as a front attachment for any current Adams heavy-duty motor grader. It cuts a 9-ft. path. A revolving rake, which breaks up snow ahead of the plow, may be raised to a height of 8 ft. to cut down deep drifts. Bulletin 4911 features a description of the advantages of the motor-grader, rotary-snow-plow combination. Bulletin 4912 features a description of the Adams No. 6 V-type plow, also for use with the Adams motor graders. The snow wing is designed for cut-widening operations and sloping snow banks.—**J. D. Adams Mfg. Co., Indianapolis 6, Ind.**

DIAPHRAGM MOTOR VALVES—Increased accuracy in control of diaphragm motor valves is offered by pressure controller described in Bulletin 150 (8 pp.). Recommended service of the No. 1500 Pilot includes pressure reducing, back pressure, pressure relief, vacuum, vacuum relief, pump governor regulation, and boiler-fuel governor. Bulletin describes construction of the unit, operating pressures, spiral spring, air relay, linkage, controls, and other component parts.—**McAlear Mfg. Co., 1901 South Western Ave., Chicago 8, Ill.**

GAS PUMPS—Catalog 31-B-17 describes gas pumps in 18 standard sizes with capacities ranging from 5 to 620 cfm. at pressures up to 2 lb., from 5 to 320 cmf., up to 4 lb., and from 5 to 175 cfm., up to 6 lb. This booklet (8 pp.) discusses the advantages of the rotary positive principle, and shows sectional views with a chart to illustrate graphically volume and power characteristics of constant pressure and variable-speed, multi-speed, or constant-speed drives. These pumps handle natural and manufactured gas, hydrogen, oxygen, carbon dioxide, and many other gases.— **Roots-Connersville Blower Corp., 900 W. Mount St., Connersville, Ind.**

TWINBATCH PAVER—Relative production capacities of single-drum and two-compartment-drum pavers are discussed in detail in Catalog K-293. A complete description is included of the improved Model 34-E Koehring Twinbatch paver. More than 45 photographs and illustrations are used to describe graphically the high-capacity production features developed by this paver, which has a top output of 86.7 batches of concrete per hr. on a 60-sec. mixing specification.—**Koehring Co., 3026 W. Concordia Ave., Milwaukee 10, Wis.**



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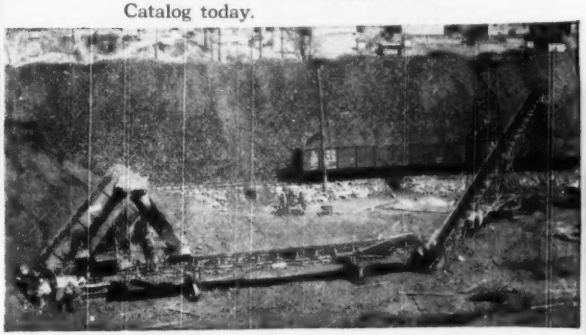
Load 3 To 8 Yards Per Minute

Haiss Bucket Loaders are used for excavating — rehandling — stripping and loading: sand — gravel — stone top-soil — coal and similar materials. Self Propelled, Self Feeding — wheel or crawler mounted — One man operation. Write for Bucket Loader Catalog today.



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•CONVEYORS portable or stationary CAR UNLOADERS

HAISS FLAT or TROUGH BELT CONVEYORS
(Model 481 and 482)

For all bulk materials. Mounted on "V" or mast truck with swivel wheels. Ask for Bulletin No. 481 for coal or coke handling—Bulletin No. 482 for sand and gravel, etc.

HAISS CAR UNLOADERS
(Models 483 and 484)

Belt and drag types for low-cost undercar unloading from hopper bottom cars. Ask for bulletin No. 483-4.

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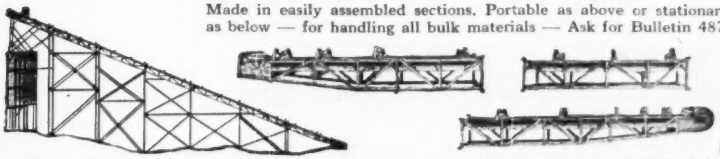
Made in easily assembled sections. Portable as above or stationary as below — for handling all bulk materials — Ask for Bulletin 487.



•BUCKETS

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THIS MAN WOULDN'T NEGLECT

A MACHINE IN HIS PLANT

...yet he hasn't had a Chest X-Ray!

He checks every piece of mechanical equipment he owns for wear, lubrication, efficiency.

Yet he fails to take the simple precaution of a Chest X-Ray to make sure he does not have tuberculosis. *Not because he's opposed to the X-Ray. Simply because he is not sufficiently informed—or just hasn't taken the time and trouble, or does not realize the seriousness of the problem.*

A Chest X-Ray is the first step toward detecting tuberculosis in its early stages. And in its early stages it can be cured with the least loss of time from work.

So, if you're the man above, that one simple reason should make you get your Chest X-Ray—*today*. But listen, see how serious this really is:

Between the ages of 15 and 34, tuberculosis leads all other diseases as a cause of death—although at no age are you safe from TB. Yet, if everyone does his part by getting a Chest X-Ray periodically, and the majority of cases thus discovered are followed up, we can eliminate TB entirely as a public health hazard!

Will you do your part today? Get a Chest X-Ray. It may mean your life!

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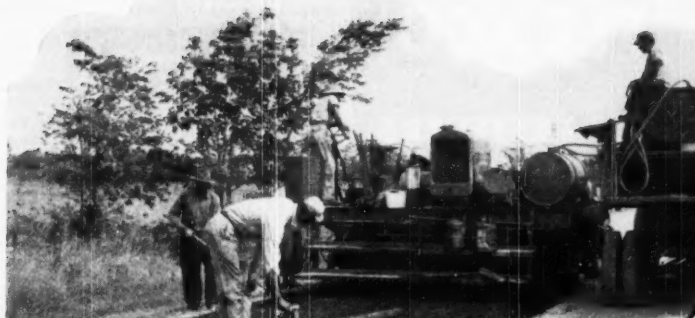

SURFACE ACCURACY

no other method of spreading can equal

Continuous Course Correction — the automatic feature of the Adnun that corrects the irregularities in successive courses of black top pavement is an exclusive Adnun feature.

With the rollers riding on the finished surface and the Cutter Bar set close to the rollers, finished surfaces of unusual smoothness can be laid even with a very rough base and the minimum of advanced preparation.

The danger of "tearing" is reduced by the oscillating, sawing, cutting action of the Cutter Bar and an initial compression results from the bevel design of the tooth. This combined with the Breaker Bar action permits laying the heavier, tougher, cold mixes other pavers find difficult. Full adjustment permits "feathering" edges for widening on crowned surfaces and laying narrow strips. These advantages mean time and money. Don't plan a Black Top Contract without investigating the Adnun.

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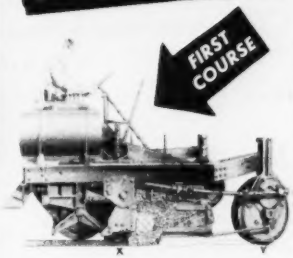
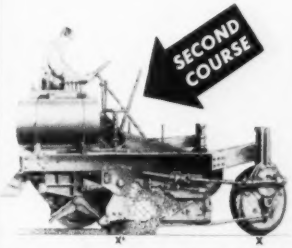
BLACK TOP PAVER

See How the Adnun Lays Smoother Pavement

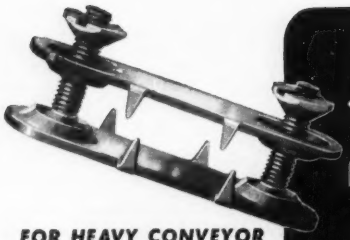


Photodiagram of an Adnun Black Top Paver laying the first course over irregularities. For the purposes of illustration, the front wheel has been dropped into a hole the unusual depth of 5 inches. Even a hole this deep causes a deflection at the Cutter Bar (X) of only 3/4 of an inch.



Photodiagram of the second or top course. Here the front wheel of the Adnun has arrived at (X) a drop of 3/4 of an inch. The 3/4 inch hollow will be smoothed completely and an imperceptible ripple of 3/16 of an inch will be left at (X1) in the finished course.

Are you pouring concrete? Ask for a copy of the Booklet, "How Would You Do These Jobs?", on the MultiFoote HighLift Boom.



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BELT FASTENERS AND RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

FLEXCO Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

FLEXCO Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

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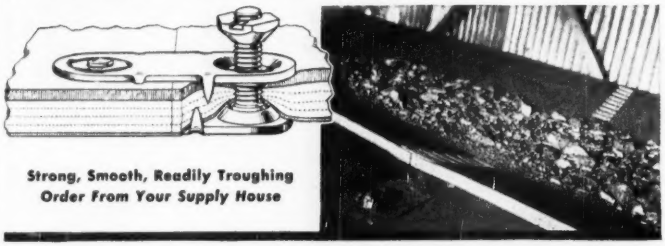

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DUCT; THERMAL INSULATIONS—Two bulletins describe the features of two types of Fiberglas insulation. The bulletin on duct insulation (12 pp.) contains design data for its application; lists the properties of the material; and provides a detailed description of field-application procedure. The bulletin on thermal insulation (16 pp.) contains descriptions of all the forms of Fiberglas thermal insulation for industrial and building applications, data on thermal conductivity, and sound-absorption properties. It is illustrated with numerous application photographs. — **Owens-Corning Fiberglas Corp., Toledo 1 Ohio.**

ONE-CYLINDER DIESELS — Four new bulletins describe the Nordberg 4½x5¼-in. one-cylinder diesel engine. These bulletins, Nos. 166, 167, 167-A, and 168, give specifications, detailed information, and outline drawings of the Model 4FS-1 diesel as adapted to power take-offs with and without clutches, generating units, and pumping units. The engine is rated at 15 hp. at 1,800 rpm.—**Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee 7, Wis.**

DRAGLINE BUCKETS — Complete line of buckets and fittings are listed in this catalog. The Yaun buckets are available in seventeen sizes ranging from ⅜ to 4 yd. Each type and size of bulletin is illustrated, accompanied by a table listing component parts, price per fitting, and material from which each part is fabricated. Text describes principal features of each.—**Yaun Dragline Buckets & Mfg. Plant, Baton Rouge, La.**

MECHANICAL VIBRATING CONVEYOR—Features of MV vibrator, listed in detail in Bulletin 826, include use of balanced or tuned vibration, isolation of vibration, flexibility of design, positive conveyability, and handles many types of materials. Bulletin contains a detailed description of the construction and operation of the Model MV.—**The Jeffrey Mfg. Co., 923 N. Fourth St., Columbus 16, Ohio.**

NUTS, BOLTS, GUARD RAILS—Seventy-six-page stiff-bound catalog lists a complete line of metal accessories including nuts, bolts, guardrail material, pole-line hardware, rods, washers, and special metal-treating processes. The Sealtite units are made in a wide variety of sizes and shapes, each of which is listed in the 1949 catalog. Tables present concise data on dimensions, weight, and list prices.—**Lewis Bolt & Nut Co., 504 Malcolm Ave., S. E., Minneapolis 14, Minn.**

If you want peak production from your equipment

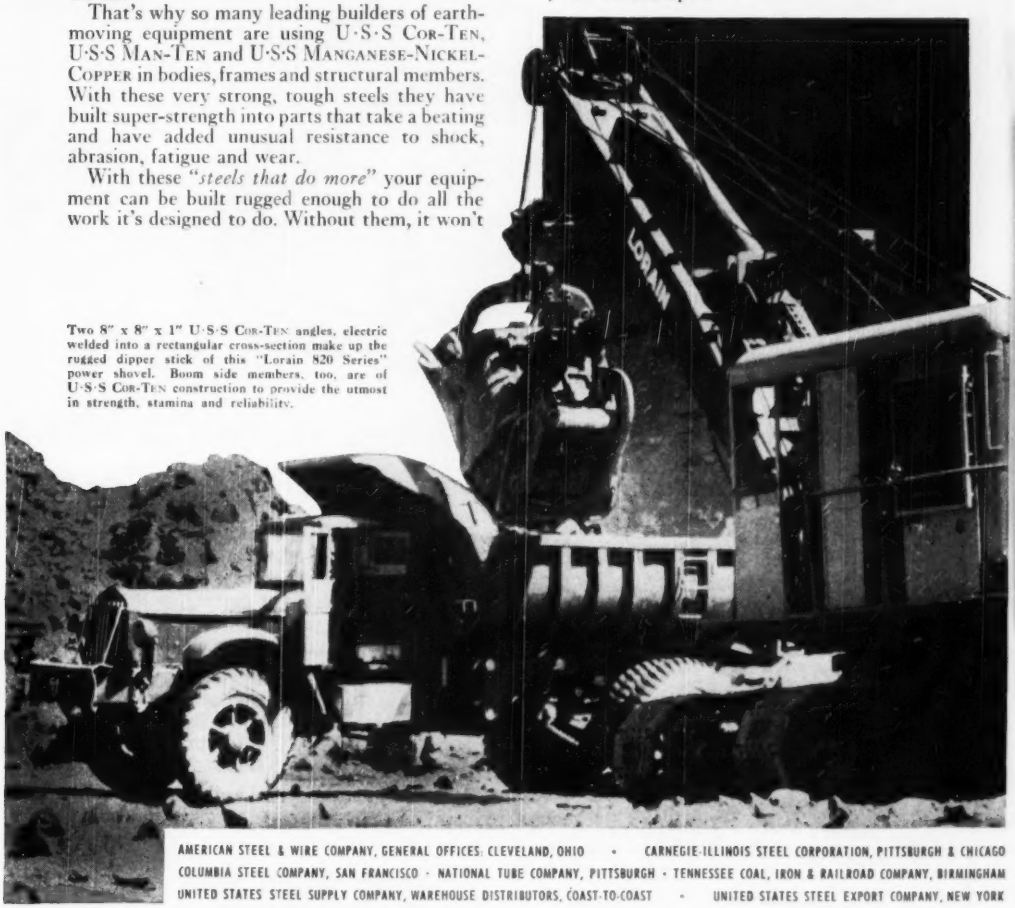
—you've got to build it *rugged!*

POWER, speed, capacity and maneuverability—the more you increase them the more yardage your equipment will move, the faster it will operate and the lower the cost of operation. But *only* if it has the stamina to stand up under slam-bang operation day after day. Rugged strength and plenty of it—is a basic requirement of heavy-duty shovels, scrapers, ditchers, 'dozers and trucks.

That's why so many leading builders of earth-moving equipment are using U·S·S COR-TEN, U·S·S MAN-TEN and U·S·S MANGANESE-NICKEL-COPPER in bodies, frames and structural members. With these very strong, tough steels they have built super-strength into parts that take a beating and have added unusual resistance to shock, abrasion, fatigue and wear.

With these "*steels that do more*" your equipment can be built rugged enough to do all the work it's designed to do. Without them, it won't stay on the job as it should—without them, maintenance costs and break-downs will cut deep into your profits.

For more than 14 years we have been supplying U·S·S High Strength Steels for equipment that is famous for stamina and performance. The wealth of practical engineering and fabricating data we have accumulated by this experience is freely yours to call upon.



Two 8" x 8" x 1" U·S·S COR-TEN angles, electric welded into a rectangular cross-section make up the rugged dipper stick of this "Lorain 820 Series" power shovel. Boom side members, too, are of U·S·S COR-TEN construction to provide the utmost in strength, stamina and reliability.

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Six Wheelbases Providing Nine Cab-to-Axle Dimensions

Here's real "big" truck performance in the middle duty hauling range . . . here are GMC's new 470 models . . . trucks for over-the-road and off-the-highway operators that set new standards in 2½-ton hauling ability.

These GMCs are all truck-built from exclusive bumper-bar grille to tough, rugged rear axle . . . offered in single, double reduction or 2-speed types. They have big GMC valve-in-head engines and are available with air brakes . . . features that make them highly desirable for both truck and tractor use

GMC 470s, in ten models, are built to provide an extra margin of performance . . . to haul bigger loads at less cost in the construction transport field.

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WATER-CONDITIONING PROCESSES, EQUIPMENT—Concise outline describes products, services, and background of company producing water-conditioning processes and equipment. Bulletin WC-100 contains complete information on the company, its manufacturing facilities, advantages of the Graver equipment and methods, and a list of several typical installations.—**Graver Water Conditioning Co., Dept. 220, 216 W. 14th St., New York 11, N. Y.**

EARTHMOVERS IN ACTION—Photographic review of International crawler and wheel tractors in a wide variety of earthmoving operations is presented in a new 12-p. catalog. Models ranging from the 140-hp. TD-24 to the 44-hp. ID-9 are shown on typical jobs with matched mounted or drawn equipment. Brief captions give work details and owner reports of tractor performance.—**International Harvester Co., Industrial Power Division, 180 N. Michigan Ave., Chicago 1, Ill.**

PIPE PROTECTION—Fifth edition of book on pipe protection (22 pp.) describes the latest advances in pipe-protection methods. Information is provided on coating and wrapping applications, on Roto-Grit-Blast cleaning, preheating, inspection methods, delivery scheduling, load unit shipping, and field handling. The 5th edition is designed as a buying aid for engineers and technicians interested in increasing efficiency of their pipe protection.—**Hill, Hubbel & Co., Div. General Paint Corp., 2627 Army St., San Francisco, Calif.**

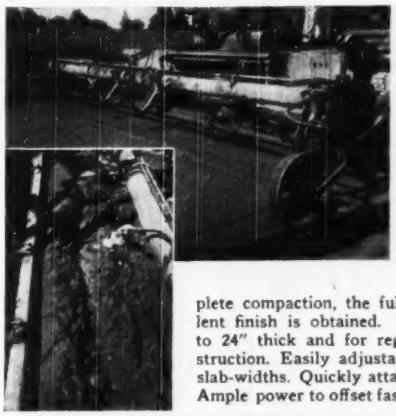
THERMAL INSULATION—"Simplified Physics of Thermal Insulation" is available in a revised edition. The book is replete with facts about heat transfer, vapor and vapor flow, condensation radiant heating, and other information pertinent to the subject of insulation and insulation values. Of textbook scope, the book is written in down-to-earth language. It is profusely illustrated with photographs, charts, and diagrams.—**Infra Insulation, Inc., 10 Murray St., New York 7, N. Y.**

PORTABLE LIGHTING EQUIPMENT—Electric lines for power transmission and portable lighting are described in Catalog SL-202. The String-a-lite lines are sectionalized to simplify installation and provide maximum portability. The bulletin explains how these sections can be interconnected at proper intervals to form one continuous light or power string. Other features are also listed.—**Mines Equipment Division, Joy Mfg. Co., Dept. A67, Henry W. Oliver Bldg., Pittsburgh, Pa.**

STEP UP YOUR PAVING PROFITS!

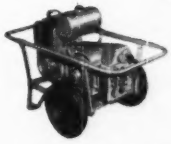
JACKSON SIDE FORM VIBRATOR

Eliminates manual vibrating of concrete at side forms. Saves the better part of two men's labor. Mounts on any modern finisher, Jackson Vibratory Paving Tube or spreader. Employs two or more vibratory units that are simultaneously lowered into or raised from the concrete by the finisher operator. Units operate close to forms or reinforcement without fouling — ride over any obstruction encountered. Will not penetrate into sub-base. Assures thorough compaction regardless of speed of finisher or spreader — no spots missed. Long-wearing, trouble-free.*



JACKSON VIBRATORY PAVING TUBE

Quickly makes plastic the stiff, drier concrete mixes which effect up to 10% cement savings. Concrete at forms or joints is, under most conditions, puddled perfectly, thus saving manual vibrating. Reduces spreading cost, steps up finisher progress. Complete compaction, the full width of the slab, and excellent finish is obtained. Perfectly adaptable to slabs 6" to 24" thick and for regular single or two-course construction. Easily adjustable in the field from 10' to 25' slab-widths. Quickly attachable to any standard finisher. Ample power to offset fast drying and setting conditions.*



JACKSON PORTABLE POWER PLANTS generate both single phase and 3-phase 115 volt, 60 cycle AC. Ideal for lights and power tools. Capacities: 1.25 to 5 KVA.

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STERLING WHEELBARROW CO., MILWAUKEE 14, WIS.

Welded tray, all-steel construction with reinforced tubular steel frame, channel steel legs and roller bearing wheel with pneumatic tire. Assures smooth wheeling and perfect balance.

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- Ideal for Concrete Work
- Quickly Thaws Out Materials
- Over One Million B.T.U. Output

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FOB—
Columbus, Nebr.

A sturdy, dependable heating plant. Has many construction uses. Recommended for concrete work in low temperatures. Warms aggregate at batching plant; prevents freezing concrete while setting. Just the thing for drying and curing plaster or paint and other such jobs. Preheats machinery. Burns 1 to 9 gals. distillate or kerosene an hour; furnishes up to 1,100,000 B.T.U.'s direct heat per hour. Built-in fan delivers up to 7,000 CFM at ½ inch water pressure or 5,000 CFM at 5 inches pressure up to 250°F output. Gasoline or electric motor furnished if desired. Adjustable outlet pipe is removable for adapting to fit job. Mounted on skids. Used on Federal and private construction. Almost 3,000 in use on farms dehydrating corn. Beat weather delays . . . write, wire for full information . . .

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BULLDOZERS, SCRAPERS, MOTOR GRADERS—Three new bulletins released by Caterpillar are devoted to discussions of the features and applications of bulldozers, motor graders, and scrapers. Form 12172 (16 pp.) lists a variety of bulldozer applications ranging from pushing 4-ton boulders to feeding conveyors. It is entitled, "What Caterpillar Bulldozers Can Do for You". Form 11960 (32 pp.) describes the use of diesel motor graders for road ditching, scarifying, bank shaping, snow plowing, oil mixing, or general road maintenance. Entitled "Caterpillar Diesel Motor Graders" it stresses such features as the rear-mounted engine, rigid rear axle, power controls, power, and low-pressure tires. Form 12480 (16 pp.) entitled "Caterpillar Scrapers Are Profit Makers" offers pertinent information on scraper applications featuring easy loading, big tires, dozer-type ejection, high apron lift, low center of gravity, open-top bowl, and low maintenance costs. Another bulletin, Form 12479, discusses "Bucking Snow Costs". It provides first-hand data and photographs on practical and low-cost snow removing, using diesel-powered equipment.—**Caterpillar Tractor Co., Peoria 8, Ill.**

MATERIALS - HANDLING MANNUAL — This manual offers 355 ways to cut inventories and to answer hundreds of specific problems encountered by users of materials-handling equipment. Dimensions, load ratings, and code numbers of all the Aerol products are tabulated for quick and easy reference. Compensation tables, conversion charts, and cross-references have been completely eliminated.—**Aerol Co., Inc., 2820 Ontario St., Burbank, Calif.**

DOUBLE-IMPELLER BREAKERS—Five double-impeller breakers are described in 16-p. Bulletin 100A1. A 4-p. section is devoted to a description of the principle of dual impact action; cutaway drawings show how stone is reduced by impact in suspension with twin whirling impellers inside the breaking chamber; photographs illustrate each of the five models; and another section shows breakers installed as skid-mounted units and as part of one- and two-unit semi-portable and portable crushing and screening plants. —**New Holland Mfg. Co., Mountville, Pa.**

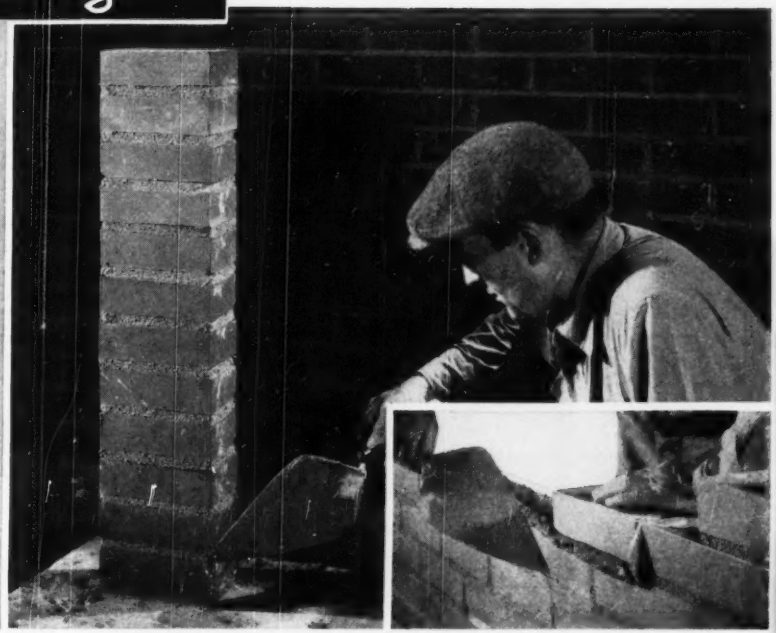
SNOW-THAWING POWDER—Technical data bulletin discusses the use of Melt, a new ice and snow thawing chemical powder. The bulletin contains complete application directions for this product which is distributed in pellet form.—**The Chem Industrial Co., 1114 Hippodrome Bldg., Cleveland 14, Ohio.**

CUMBERLAND GIVES YOU ALL 10!

No. 2 Body ✓

The 10 basic requirements for high quality masonry cement

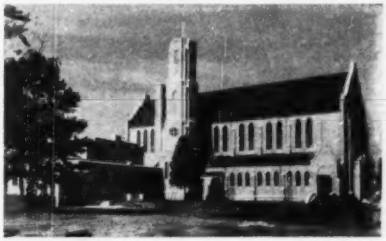
1. Plasticity
2. **Body**
3. Strength
4. Yield
5. Color
6. Adhesion & Bond
7. Negligible shrinkage
8. Water retention
9. Water repellency
10. Non-efflorescence



Column of 12 bricks shown above was laid within five minutes using Cumberland Masonry Cement. Note how joints remain uniform from top to bottom — no squeeze-out despite great weight on fresh mortar. Inset photo clearly illustrates firm yet easily workable body at spreading stage.

FRESH masonry mortar, only *minutes* from the spreading stage, must support the growing weight of course upon course of masonry units. For mortar that has the *uniform body* it takes . . . mortar that won't squeeze out of joints or permit uneven settling . . . you can always depend on Cumberland Masonry Cement.

Better to work with, better to build with, Cumberland Masonry Cement with its pleasing light color fulfills every requirement of the architect, the engineer and the mason.



St. Joseph Catholic Church, Columbia, S. C. Southeastern Construction Co., Charlotte, N. C., builders. Cumberland Masonry Cement used throughout.

Cumberland

PORTLAND CEMENT COMPANY

Chattanooga Bank Building • • Chattanooga 2, Tennessee

Portland — High Early Strength — Air Entraining — Masonry

Tie-Rods
FOR EVERY
Structural Need

Bethlehem Tie-Rods are produced in types and sizes to meet every structural need. They are made from new-billet steel to ASTM Specification A-7, but other grades of steel can also be furnished. Unless otherwise specified, they are threaded to American Standard Coarse, Class 2 free fit.

Tie-Rods are manufactured at Bethlehem's Lebanon, Pa., plant. They come straight or bent, in single or multiple units, and are furnished either asphaltum-dipped or hot-dip galvanized. Order them with turnbuckles, clevises, nuts and other Bethlehem accessories.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

Export Distributor:
Bethlehem Steel Export Corporation

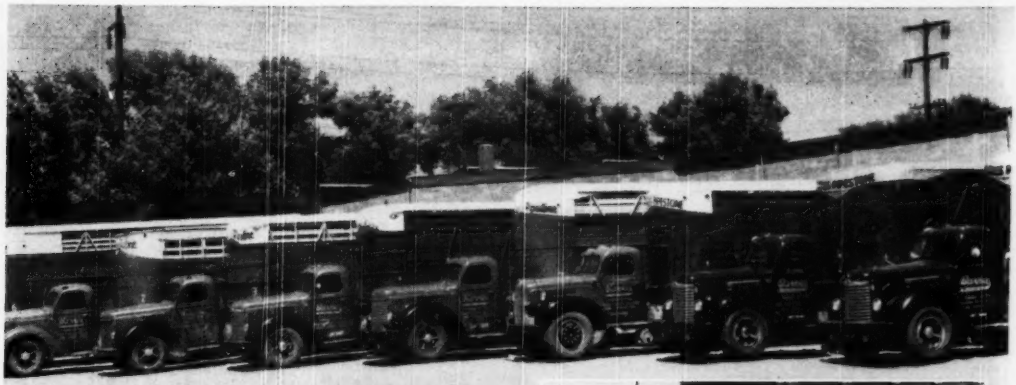
UPSET RODS

Cut threads. Furnished in thread diameters up to and including 4½ in. All lengths.

PLAIN RODS

Cut threads in all sizes. Rolled threads come in diameters up to and including 1½ in. Supplied in all lengths.

BETHLEHEM STEEL



Above: Eight of the 17 trucks operated by the Barnes Brothers, Pipestone, Minnesota.

Right: Roy Barnes, Leo Nesius of Standard Oil, Harry Barnes.

How they *DOUBLED MILEAGE* between overhauls . . .

Stanolube HD Motor Oil

● When ring sticking and sludge troubles began whittling down mileage between overhauls, the Barnes Brothers of Pipestone, Minnesota, turned to a Standard Oil Automotive Engineer for help. At his suggestion, two bad actors in the fleet of 17 trucks were switched to STANOLUBE HD Motor Oil.

After three months of operation on STANOLUBE HD, the two engines were inspected. *There was no sludge. Rings were free.*

STANOLUBE HD is now used throughout the Barnes Fleet. Ring sticking and sludge troubles have been completely eliminated. An effective preventive maintenance program has been set up by Roy Barnes, equipment superintendent, with the help of the Standard Engineer. The over-all result: Barnes trucks, today, go twice as far between overhauls.

Whether you have a particular lubrication problem or are simply looking for greater fleet economy, a Standard Oil Automotive Engineer can help you. He offers you the finest automotive fuels and lubricants on the market. He has the practical experience and specialized training to help you obtain the maximum benefits from these products. Arrange for his visit, now, by writing to: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA) STANDARD

CUT COSTS ON UNDERGROUND PIPING JOBS

...with a GREENLEE PIPE PUSHER

Installing pipe underground is quick and simple this way. With a GREENLEE Hydraulic Pipe Pusher *one man* pushes pipe through the ground—under streets, railways, walks, lawns, floors. Saves time, cuts costs through elimination of extensive ditching as just a short trench accommodates the Pusher. No tearing up of pavement, lawns, floors . . . eliminates tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. Pusher often pays for itself through timesavings on first job or two.

No. 790 GREENLEE PUSHER For 3 4 to 4-inch pipe. Six speeds—5,600 to 40,000 lbs. pushing pressure.

No. 795 GREENLEE PUSHER For pipe larger than 4-inch, concrete sewer pipe, large drainage ducts. Six speeds—25,000 to 150,000 lbs. pushing pressure.

POWER PUMP For both sizes of GREENLEE Pushers. Pushes pipe at rate of two feet per minute.

GREENLEE

Get facts on timesaving Greenlee tools now. Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2182 Columbia Avenue, Rockford, Illinois, U. S. A.

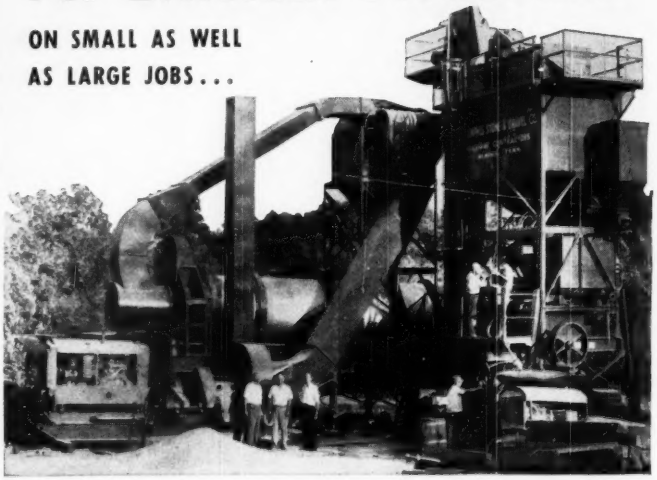
PROTECTIVE COATINGS—Latest advances in coatings based on Bakelite and Vinylite resins are described in Bulletin G-16-a. These are formulated for use with cement-asbestos shingles, concrete, fresh plaster, and wallboard; fortification of casein paints; concrete blocks; metal coatings; and others. The bulletin contains a complete description of each product and its method of application.—**Bakelite Corp., 300 Madison Ave., New York 17, N. Y.**

GASOLINE, ELECTRIC HOISTS—Clyde Frame-3 hoists with gasoline or electric drive are described in 4-p. folder. Data presented cover hp. ratings, single-line pull, line speed, drum size, flange diameter, and weight. Both types of hoists are available in single- or double-drum models. — **Clyde Iron Works, Inc., Duluth 1, Minn.**

WOOD PRESERVATIVE—Protecting wood from insect attack is discussed in Bulletin T-49. This 6-pager provides valuable information on how to prevent termite attack and how to save wood already infested. Powder-post beetles and dry-wood termites and their control also are discussed.—**Chapman Chemical Co., 770 Dermon Bldg., Memphis 3, Tenn.**

For Efficient Production

ON SMALL AS WELL AS LARGE JOBS...



H&B Model PA Portable Asphalt Plants

Shown above is the Hetherington & Berner PA-30 hot mix plant recently delivered to Memphis Stone & Gravel Co., Highway Contractors, Memphis, Tenn. These PA plants are designed to give efficient production on small as well as large jobs—under a wide variety of operating conditions.

PA plants may be driven with individual motors or from one main power unit for the tower and one for the dryer, using gasoline, diesel, diesel electric or electric power. They are easily portable by truck. Low overall height is maintained by using a flat screen, and can be further reduced by use of a depressed driveway. Write for Bulletin P-46.

MOTO-PAVER

The complete mixing and paving machine for mixed-in-place work. Write for Bulletin MP-47.

HETHERINGTON & BERNER INC.

735 Kentucky Avenue, Indianapolis 7, Indiana

H&B Builds Portable and Stationary Asphalt Plants of All Types, Sizes and Capacities

SALES AND PARTS SERVICE

A department devoted to manufacturers' activities involving the sale and distribution of products and parts, and service facilities. Designed to give the reader information that will enable him more readily to purchase products and parts and to service his equipment.

Equipment Distributor Appointments

Ralph B. Carter Co.: Harry J. Blass & Associates, Denver, is named manufacturers' representative for the entire state of Colorado. Named as dealers are King & Kringel Machinery Corp., 2390 S. Delaware St., Denver; Gunderson-Taylor Machinery Co., 970 Cherokee St., Denver; and Colorado Pump & Supply Co., 1449 S. Broadway, Denver. Harry P. Leu, Inc., Orlando, is named distributor for Florida.

Hose Accessories Co.: East Pacific Co., 208 S.W. Stark St., Portland, is named manufacturers' representative for the Pacific Northwest territory including Washington, Oregon, Idaho, western Montana, and British Columbia.

W. A. Riddell Corp.: Construction Equipment Sales, Inc., 2264 University Ave., St. Paul, is distributor for Warco motor graders in the state of Minnesota.

New Sales Outlets

Towmotor Corp.: New factory sales and service branch at 4th and Castro Sts. in Oakland, Calif.

Black & Decker: Has moved its Atlanta Factory Sales and Service Branch to a new building at 316 Techwood Dr., N. W., Atlanta 3, Ga.

Sales Personnel

Pennsylvania Refining Co.: Announces the appointment of nine new sales representatives—L. H. Cox Associates, Minneapolis, for North and South Dakota, Minnesota, Iowa, northern Wisconsin, and the upper peninsula of Michigan; F. Somers Peterson Co., San Francisco, for California, Nevada, and Arizona; James H. Page, Denver, for the Mountain States territory; Winkenweder & Ladd, Chicago, for Illinois, Indiana, Michigan, southern Ohio, eastern Missouri, and southern Wisconsin; Rice Bros., Portland and Seattle, for Washington, Oregon, and western Idaho; E. M. Arnold, Pittsburgh, for West Virginia, eastern Ohio, and western Pennsylvania;

(Continued on page 147)

Continental Warehouse Service Helps You Keep the Job Moving!

When you need suction hose in a hurry, consider the advantages of Continental's near-at-hand branch warehouse facilities. These factory warehouses, listed below, carry large stocks of hose for every requirement. They're located within reasonable telephone and delivery range. In short, they're equipped and situated to give the prompt, dependable service that helps you keep the job moving—that protects your profit in a job. Get acquainted *now* with Continental Warehouse Service.

LET US SEND YOU THIS CATALOG →

With a Continental Catalog in your field office, you have helpful buying information at your finger tips. Write for your catalog today.

Rubber by CR **CONTINENTAL RUBBER WORKS**

1988 LIBERTY AVENUE • ERIE, PENNSYLVANIA

BRANCHES

Baltimore, Md.	Dayton, Ohio	Los Angeles, Calif.	Pittsburgh, Pa.
Boston, Mass.	Detroit, Mich.	Lutz, Fla.	Richmond, Va.
Buffalo, N. Y.	Hartford, Conn.	Memphis, Tenn.	Rochester, N. Y.
Chicago, Ill.	Indianapolis, Ind.	Milwaukee, Wis.	St. Louis, Mo.
Cincinnati, Ohio	Kansas City, Mo.	New York, N. Y.	San Francisco, Calif.
Cleveland, Ohio	Lancaster, S. C.	Philadelphia, Pa.	Syracuse, N. Y.

America's Most Outstanding Truck Values

—with more power than ever!

Here are the models to make motor-truck history. These new Chevrolet P•L trucks are advance-designed for the heaviest loads, the roughest roads, the lowest cost per trip.

They are far ahead in popularity, performance, payload, price—and they are the *most powerful trucks Chevrolet has ever built.* There is a P•L truck for every trucking job and every one is a real leader on the job.

Chevrolet Motor Division, General Motors Corporation
Detroit 2, Michigan

Leading with all these PLus *Features:*

• TWO GREAT VALVE-IN-HEAD ENGINES: the New 105-h.p. Load-Master and the Improved 92-h.p. Thrift-Master—to give you greater power per gallon, lower cost per load • THE NEW POWER-JET CARBURETOR: smoother, quicker acceleration response • DIAPHRAGM SPRING CLUTCH for easy action engagement • SYNCHRO-MESH TRANSMISSIONS for fast, smooth shifting • HYPOID REAR AXLES—5 times more durable than spiral bevel type • DOUBLE-ARTICULATED BRAKES—for complete driver control • WIDE-BASE WHEELS for increased tire mileage • ADVANCE-DESIGN STYLING with the "Cab that Breathes" • BALL-TYPE STEERING for easier handling • UNIT-DESIGN BODIES — precision built.

CHEVROLET

P•L*

ADVANCE-DESIGN TRUCKS

P*opularity L*eaders Official truck registration figures for 1949 show Chevrolet trucks preferred over the next two makes combined—proof of the owner satisfaction they earn through the years.

P*erformance L*eaders The new Chevrolet P•L trucks give you high pulling power over a wide range of usable road speeds — and on the straightaway, high acceleration to cut down total trip time.

P*ayload L*eaders The rugged construction and all-around economy of Chevrolet P•L trucks cut operating and repair costs—let you deliver the goods with real reductions in cost per ton per mile.

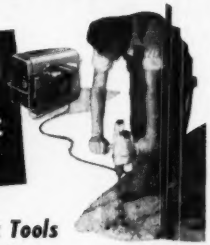
P*rice L*eaders The Chevrolet truck line is the very lowest priced line in the field—saves on initial cost. What's more P•L trucks give owners dollar and cents savings in maintenance and operation.

CHEVROLET

1 MAN CAN DO THE WORK OF A CREW...

with an

ONAN *Portable* **ELECTRIC PLANT**

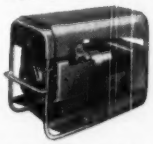


Use Electric Tools on Every Job!

Speed the work, cut costs on installation and maintenance jobs. Lightweight Onan air-cooled electric plants supply electric power anywhere for lights, drills, saws, hammers, spades and other motor-driven tools. Equipped with carrying handles or dolly-mounted. Take 'em anywhere and plug in for all the power you need.

SHIPPED COMPLETE READY TO RUN

Gasoline powered models— A. C.: 350 to 35,000 watts. D. C.: 750 to 15,000 watts. *Diesel plants:* 2,500 to 55,000 watts.



Model 5CK, 5,000 watts D. C. Weighs only 315 lbs.

Write for Folder

D. W. ONAN & SONS INC.
6761 Royalston Avenue
Minneapolis 5, Minnesota.

Shunk

Superior Quality

BLADES AND CUTTING EDGES

For any make of machine Motor Graders, Maintainers, Scrapers, Drags, Bulldozers, Backfillers, Wagon Scrapers, Trail Builders, Trail Blazers, Carryalls. Also—

CUTTING EDGES
WEARING BOOTS
BACK SLOPERS
EXTENSION BLADES
MOLDBOARDS
and
SCARIFIER TEETH

50 years of manufacturing blades has developed for you a special steel, milled through our own rolls and forged at the edges to give that extra wearing quality you need.

All widths, lengths, and thicknesses. Punched ready to fit your machine.

Consult your internationally recognized Blade Specialists. Write for special bulletins, giving type and name of machines you operate—get set for Blades early.

Shunk Member of A.E.D.

MANUFACTURING COMPANY

Established 1854

BUCYRUS, OHIO.

(Continued from page 145)

Schade Sales Co., Moorestown, N. J., for District of Columbia, Maryland, Delaware, eastern Pennsylvania, and southern New Jersey; Lew Brown & Co., Rochester, for New York state; and The Saunders Co., Greensboro, N. C., for South Carolina, Georgia, and Florida.

Texas Gas Transmission Corp.: Duncan K. Foulds and Monty G. Martin will staff the new Shreveport, La., office.

Universal Atlas Cement Co.: David H. Deacon is appointed assistant sales manager of the Dayton, Ohio, territory.

Universal Concrete Pipe Co.: C. Ray Wilhelm is southeastern division manager covering Georgia, Tennessee, Alabama, and Florida.

Westinghouse Electric Corp.: John E. Payne is manager of the Central District which includes Pittsburgh, Cleveland, Detroit, and the Cincinnati areas.

Worthington Pump & Machinery Corp.: Howard H. Pruneau is promoted to construction equipment regional supervisor for the midwest territory.

Ownership Changes

CORR-PLATE piling is now manufactured by caine CORR-PAINE piling company, 2535 S. State St., Chicago 16, Ill.

New Plants and Offices

Ohio Adhesives Corp.: Has completed construction of new plant at New Philadelphia, Ohio, for manufacture of resin and rubber adhesives for the industrial, automotive, and building trades.

Motorola, Inc.: New 40,000-sq.ft. research laboratory and specialized production building will be located in Phoenix, Ariz.

Joseph T. Ryerson & Son, Inc.: Addition to the Chicago plant provides 118,000 sq. ft. for modern plant and office space.

Production

Link-Belt Co.: Richard E. Whinrey is named assistant general manager of the Ewart plant at Indianapolis; Raymond S. Wood becomes general manager of the Dodge plant at Indianapolis; Leslie J. Carson assumes the position of general manager of the Minneapolis plant and North Central sales division, and William P. Ridsdale has returned to Chicago as chief engineer of the Caldwell plant.

Luria Engineering Corp.: Milton A. Karp is appointed chief engineer of

(Continued on page 150)

Sure Protection AGAINST *CAVE-INS*

SIMPLEX

Drop Forged Steel

TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

SEND FOR BULLETIN: U 49

Simplex 1899 1949
LEVER · SCREW · HYDRAULIC
Jacks

TEMPLETON, KENLY & COMPANY
1098 South Central Avenue
Chicago 44, Illinois

GUARD AGAINST WEATHER DELAYS

Canvas covers are good protective insurance against weather delays. They'll help you finish your jobs on schedule and save time, labor and money. Use tarpaulins to shelter materials, protect valuable equipment, and close exposed openings.

Tough canvas covers can be moved easily where and when you want them. They are made to stand rough treatment, and can be used on job after job.

Your tarpaulin dealer has practical sizes for every construction need. Call him TODAY.

NATIONAL COTTON COUNCIL . MEMPHIS, TENN.

The New SEAMAN MIXER

THE PRIMARY EQUIPMENT FOR ALL MAJOR BITUMINOUS, SOIL-CEMENT AND ALL SOIL-STABILIZED *Projects!*

THE SEAMAN SELF-PROPELLED PULVI-MIXER

Close-coupled, short turning radius; single or dual transmission gives 3 to 7 mixing forward speeds plus road-gear and reverse. Wide visibility for operator. All controls in instant reach.

Yes, — large *projects* that have been handled by states, municipalities, counties and contractors such as these, — where *all* mixing was SEAMAN-produced: Andrew Scherer, contractor, N. C. (soil-cement); Davis Construction Co., contractor, N. Y. (bituminous); Standard Concrete Pipe Co., Cal. (Soil-cement); Cascade County, Montana (re-claiming oil mat); City of Birmingham, Mich. (asphalt); State of North Carolina . . . check with any or all of them about high production and fine quality mixing by the SEAMAN.

In short, the SEAMAN brings "plant-mix quality at *lowest* road-mix cost."

These new quality-mixing records are due to selective speed transmissions that match mixing speeds exactly to materials.

THE SEAMAN SELF-PROPELLED TRAV-L-PLANT

All the advantages of Self-Propelled Pulvi-Mixer plus spray bar, pump, pump tachometer and tachometer wheel for accurate, no-migrating, no-evaporating admixture of bitumen or water most efficiently just ahead of rotor. Single or dual transmission, like Self-Propelled Mixer gives mixing speeds to match all conditions.

TWO NEW BULLETINS!

One on the Seaman Self-Propelled Mixer and Trav-L-Plant—the other on the Seaman Pull-Type Mixer. Yours on request. Complete details. Send for them now.

THE SEAMAN PULL-TYPE PULVI-MIXER

Here selective speed transmission controls rotor-speed to obtain best mixing despite variables in speed of towing tractors. Can easily be equipped with spray bar, pump and tachometer wheel for bitumen or water taken from transfer or tank truck.

SEAMAN MOTORS, INC.

280 N. 25th Street **Milwaukee 3, Wisconsin**

(Continued from page 147)

the enlarged engineering department at Bethlehem, Pa.

The National Supply Co.: George F. Noltein is appointed director of research of the Superior Engine Division. He is succeeded as chief engineer by Harvey W. Hanners.

Pennsylvania Salt Mfg. Co.: Albert S. Woodard is named chief engineer.

Pittsburgh Plate Glass Co.: Clarence J. Krueger is named production manager of the paint division.

The Youngstown Sheet & Tube Co.: M. A. McAlpine is assistant superintendent of Merchant Mills at the Harbor Works; L. I. Stead is appointed chief chemist for the Chicago district plants.

Reynolds Metals Co.: Frank A. Schotters has accepted a position as operations manager of the parts division.

Worthington Pump & Machinery Corp.: K. W. Horsman is named works manager of the Dunellen, N. J., works.

Miscellaneous

The Permanente Metals Corp.: Has changed its name to Kaiser Aluminum & Chemical Corp.; Permanente Products Co. changes its name to Kaiser Aluminum & Chemical Sales, Inc.

Schramm, Inc.: Announces the celebration this year of its golden anniversary. Founded as a modest little machine shop in Philadelphia by Chris D. Schramm, the company has been in continuous operation since January 2, 1900.

Structural Clay Products Institute: Robert B. Taylor is appointed director of research of the new Structural Clay Products Research Foundation.

Personalities

Texas Gas Transmission Corp.: A. L. Roberts is named general superintendent of the company's pipe-line system; H. L. Stowers is appointed chief engineer.

United States Steel: Clifford F. Hood is elected president of the Carnegie-Illinois Steel Corp., a USS subsidiary; Harvey B. Jordan is named president of the American Steel & Wire Co., another subsidiary; James E. Lose is named vice-president of the Carnegie-Illinois Steel; and Charles R. Cox is named president of Kennecott Copper Corp.

Thompson Pipe & Steel Co.: Walker R. Young, consulting engineer and formerly chief engineer of the U. S. Bureau of Reclamation was chosen president and treasurer of Thompson.

$2,841.00 SAVED WITH Ramset

FASTENING SYSTEM

FOUR MINUTES per fastening (total time on job) with RAMSET SYSTEM instead of NINETEEN MINUTES with his old method saved this contractor $2,841.00 on one steel fastening job. Instead of slow, laborious, costly drilling—just load the self-powered, light, RAMSET FASTENING TOOL. Then—READY! RAM! SET! Quick, easy, economical—and tight. *Actual fastening time, less than one minute per fastener!*

Compare *your* fastening costs into steel, concrete and other hard materials. See how much time and money you can save with the simple, lightning-fast RAMSET SYSTEM. With 65 sizes and types of drive pins and threaded studs, you can do almost any kind of construction fastening job.

Your local RAMSET Specialist will help you cut costs and show you how to "RAMSET" your way into more profitable business. Write or wire us collect for name of nearest representative.

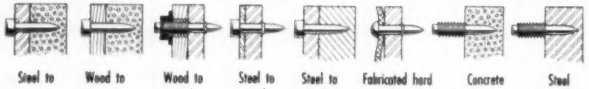
Ramset System
SAVES TIME . . . CUTS COST ON JOBS LIKE THESE:

Fastening—

- Metal framework to walls, floors and ceilings.
- Supports to concrete, brick and steel.
- Wood sills to concrete.
- Metal roofs or walls.
- Wiring and conduits.
- False ceilings and lighting fixtures.

Stemco Corporation • Cleveland 16, Ohio

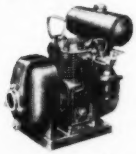
FASTEN FASTER, EASIER, CHEAPER WITH RAMSET



THE Best Pump For Lowest Cost Pumping

An actual example of Barnes "33,000 for 1" Pumps at work delivering the highest performance at the lowest operating costs on a tough job.

A Barnes "33,000 for 1" Pump To Fit Every Pumping Need

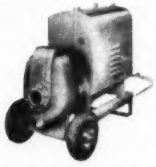


Model 3M — 3,000 gph.

Model 10M — 10,000 gph.

Model 20M — 20,000 gph.

Model 30M — 30,000 gph.



Model 40M — 40,000 gph.

Model 90M — 90,000 gph.

IT'S THE BARNES "33,000 for 1"

THINK of pumping not 1,000 gallons — not 10,000 gallons — but 33,000 gallons of water with only 1 gallon of gas! This is amazing economy! This is economy unmatched! And this is assurance that Barnes Automatic Centrifugals actually deliver more water for your pumping dollar. Ask your dealer for a free demonstration of these Barnes "33,000 for 1" Pumps. You'll find Barnes Pumps today's best buy — and you want to buy the best today.

BARNES MANUFACTURING CO.

MANSFIELD, OHIO

Manufacturers of Precision Water Control Products for Over 50 Years

It's portable . . . It's packaged

PUT IT WHERE YOU NEED *Steam*

★ READY MIX CONCRETE PLANTS ★ BITUMINOUS MIXING PLANTS
★ PILE-DRIVING ★ ASPHALT STORAGE TANKS ★ TANK CAR HEATING
★ AGGREGATE HEATING ★ WINTER CONCRETE OPERATIONS

A completely packaged unit — portable — suitable for a wide range of construction work such as — asphalt plant, storage and tank car heating, aggregate heating, ready or hot mix plants, pile driving, and winter concrete work for both hot water and steam for curing — this Cleaver-Brooks Steam Boiler will save time and money on many of your operations.

Available in 50 HP, 80 HP and 125 HP — 150 PSI. (For permanent installation a capacity range of 15 to 500 HP is available in other Cleaver-Brooks self-contained boilers.)

Clean, smokeless and require no ash disposal. Provide the easiest fuel handling. Complete safety protection — a four-pass boiler designed in accordance with A.S.M.E. code; inspected and approved by Hartford Steam Boiler Inspection and Insurance Company.

CLEAVER-BROOKS COMPANY
387 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver-Brooks

PORTABLE • SELF-CONTAINED STEAM BOILERS

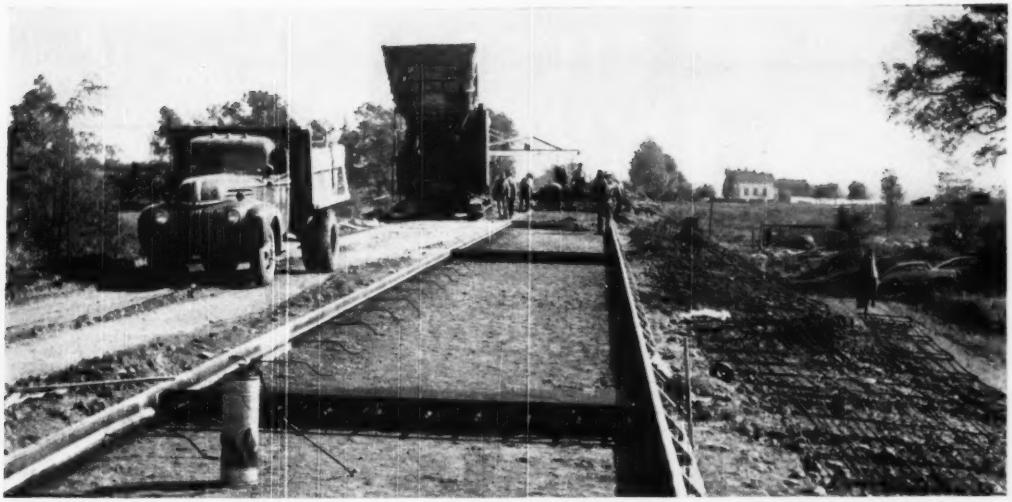
50 H. P. — 80 H. P. — 125 H. P. — 150 P. S. I.

EXPRESSLY DESIGNED FOR CONSTRUCTION OPERATIONS

- Fast Steaming
- 80% Efficiency
- Low Cost Operation
- Light-Weight
- Skid Mounting for Truck or Trailer
- Low Fire Start
- Modulating Control of fuel oil — assures constant steam pressure
- Electric Ignition
- Burn any Fuel Oil up to and including Commercial standard No. 3
- Self-Contained Fuel Tanks
- Full Weather Protection
- Factory Finished and Tested
- Choice of Gas or Electric Motor

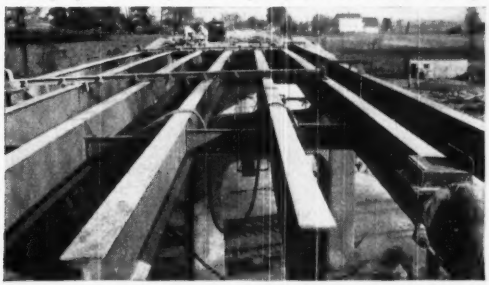
Send today for illustrated catalog on the Cleaver-Brooks Model LFM Steam Boilers.

Built by the Pioneers and Originators of Self-Contained Boilers — Tank Car Heaters — Bituminous Boosters



Truck waits turn to dump load into skip. Note Bethlehem Dowel Unit and Hook Bolt Dowels in foreground, and Bar Mats at right, ready for placing.

Head-on view of project. Fine graders lead the parade as paving swings into high gear in background. Temporary dirt road is shown at right.



Bethlehem Structural Steel shown in place in new overpass. The structure has one 61-ft, two 42-ft spans. Note railroad tracks beneath steel beams.

Bethlehem H-Piles provide firm footing for overpass. To reach bed-rock, the piles were driven 110 ft. Bethlehem H-Piles have long service life.

New Overpass in Western Pennsylvania

From left to right: J. R. Snyder, contractor; John Legnosky, Pa. Dept. of Highways; B. H. Craig, superintendent; V. C. Minteer, bridge foreman.

To eliminate a hazardous grade crossing on the heavily-traveled Linesville-Meadville highway in the western part of the state, the Pennsylvania Department of Highways recently called for a new overpass near Harmonsburg. Construction of this overpass and its two-lane approaches is shown in the accompanying pictures. Contractor: New Castle Duntile Co., New Castle, Pa. Steel items furnished by Bethlehem were bridge reinforcing, structural steel, bar mats, dowel units and guard rail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

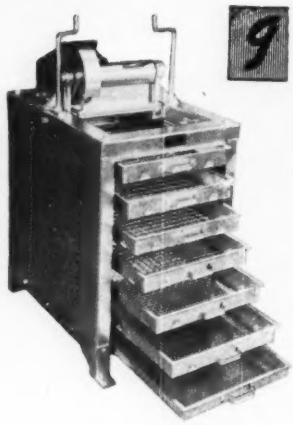
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

GILSON Mechanical Testing Screen



An attachment for handling 8 inch diameter standard testing sieves provides uniform and exceptionally rapid results on sand samples.

Assures Accurate Fast Control

• The accurate proportioning of coarse and fine aggregates, both in field and laboratory testing, is essential to all types of modern construction.

The accuracy of your mixes and the accuracy of your production can be definitely controlled on the job with the GILSON Testing Screen.

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• effectively
• safely

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- test planks for scaffolds
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(Classified Advertising)

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WANTED

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W-2131 Construction Methods & Equipment
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GET ALL THIS

50-Ton Capacity
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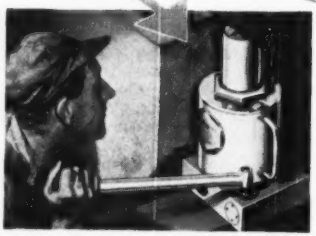
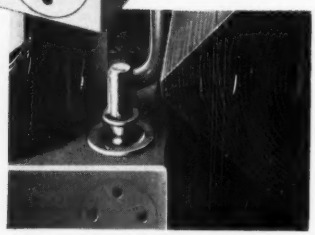
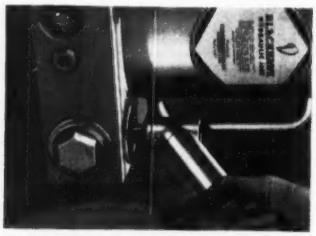
Weighs only 111 lbs.



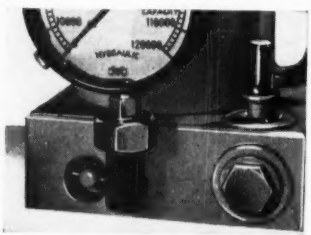
PATENTED DOUBLE PUMP—all in ONE unit! Speed pump provides fast load contact—power pump cuts in automatically! No shifting of handle, no double-yoke as with separate pumps.



EXTRA SAFETY — The pump beam is protected by the handle and base. The pump is protectively hidden in the super-strong base which is machined from a single piece of steel.



ALL-DIRECTIONAL OPERATION — Full power and travel at any angle, vertical to horizontal. The handle serves as a side-rest for horizontal use.



EXTRA UTILITY — A gauge can mount in the base to show pressure exerted for measuring or testing jobs. The answer to weighing vast tonnages and large objects.

There's a big difference in Hydraulic Jacks! Construction, mining and industrial men discover that Blackhawk Jacks last longer, serve better. It's the world's most complete line of Hydraulic Jack Equipment. And every model (1½ to 100-ton) is *one-man* operated. Order from your supply house. Write for catalogs. Blackhawk Mfg. Co., Dept. J2320, Milwaukee 1, Wis.

BLACKHAWK

"PORTO-POWER" • PIPE BENDERS • WRENCHES

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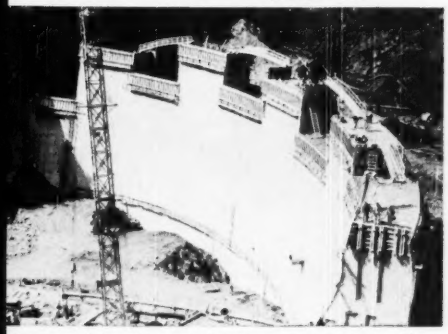
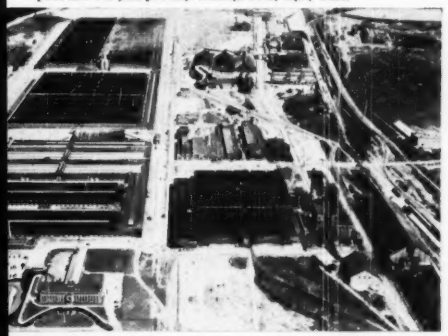
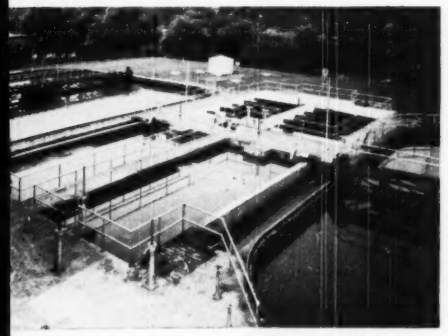
olith gave pumped concrete increased workability, easy place-ability, good cohesiveness. Milwaukee Sewage Disposal Plant.



olith increased strength, minimized shrinkage and cracks, increased pour 200 cu. yds. per day. Matilija Dam, Ojai, Calif.



us segregation overcome, time and money saved — with Pozzolith. The Aluminum Co. of Canada, Ltd., Arvida, Quebec.



lith produced good appearance, watertightness, durability in ew Brunswick, N. J. Sewage Treatment Plant, now 10 years old.

CONCRETE CHECK CHART

Following are qualities sought in concrete work. Pozzolith, the concrete man's most useful tool, is widely used to improve these qualities.

Three of these — Minimum Shrinkage, Maximum Strength, Maximum Economy — are available **only with Pozzolith . . .** because only Pozzolith's cement dispersion puts all of the cement to work, cuts water-cement ratio 15%.

- ☐ Good Plasticity
- ☐ Easy Placeability
- ☐ Pumpability
- ☐ Good Cohesiveness
- ☐ Minimum Bleeding and Segregation
- ☐ **Minimum Shrinkage and Cracks**
- ☐ Speed in Stripping Forms
- ☐ Minimum Finishing
- ☐ Density
- ☐ **Maximum Strength**
- ☐ Good Appearance
- ☐ Watertightness
- ☐ Great Durability
- ☐ **Maximum Economy**

ONLY WITH POZZOLITH ARE MINIMUM SHRINKAGE MAXIMUM STRENGTH and MAXIMUM ECONOMY ASSURED

along with these other qualities, because Pozzolith complies with the water-cement ratio law and puts all the cement to work.

Authoritative method for concrete design is American Concrete Institute's "Recommended Practice for the Design of Concrete Mixes" — ACI (613-44) . . . based on the water-cement ratio law. Pozzolith used with this procedure produces the best, most economical results.

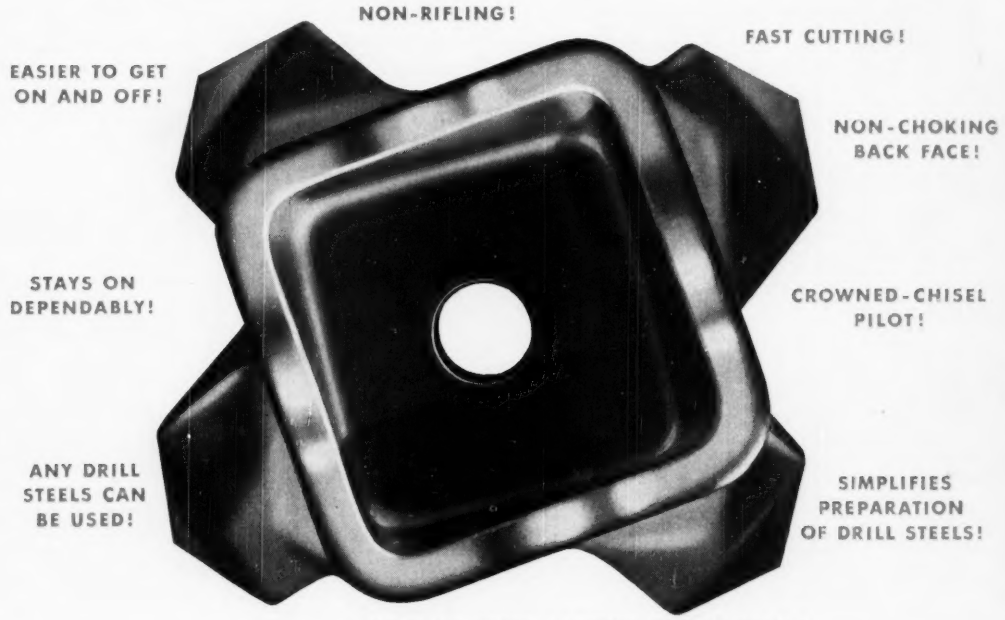
Write for bulletins giving this method . . . also new Pozzolith booklet.

The MASTER BUILDERS Co.

CLEVELAND 3, OHIO — TORONTO, ONTARIO

TIMKEN® revolutionizes the one-use rock bit!

NEW "SPIRALOCK" BIT GIVES YOU ALL THESE ADVANTAGES:



A NEW one-use rock bit developed by The Timken Roller Bearing Company offers you special advantages that can't be equalled by any other one-use bit. It's the revolutionary Timken® one-use "Spiralock" bit!

The new bit has a unique "Spiralock" union—a square socket that spirals slightly as it recedes. The superiority of this union has been proved under actual on-the-job conditions.

The bit stays on dependably in the hole. Yet it's easier to get on and off. Just a few blows of the drill and it's on; just a few blows of a hammer and it's off. Steels last much longer, are easier to prepare and recondition. Existing drill steels of any size and section can be adapted easily and quickly.

Other great advantages of the new bit are: Fast-cutting design. Crowned chisel pilot for easier starting and "collaring." "X" cutting edge that prevents rifling in any ground. Non-choking back face, scalloped and rounded off to prevent chips packing behind the bit. And because it's made of Timken electric furnace steel, the "Spiralock" bit has a long life.

The new one-use "Spiralock" bit—designed for drilling jobs where bit reconditioning is impractical or undesirable—is the latest addition to the Timken rock bit line, which includes the famous threaded multi-use bit and threaded carbide insert bit. And Timken is the only company that offers you *all three* types.

For help in selecting the right bit for your job, call on our rock bit engineering service. Write to The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

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ROCK BITS

Your best bet for the best bit for every job

1 Timken threaded multi-use rock bit.

2 Timken threaded carbide insert rock bit.

3 Timken one-use "Spiralock" rock bit.